Volume XXII.
Number 2.

FEBRUARY, 1902.

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FEB 15

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and Industrial Record.

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Textile Industries

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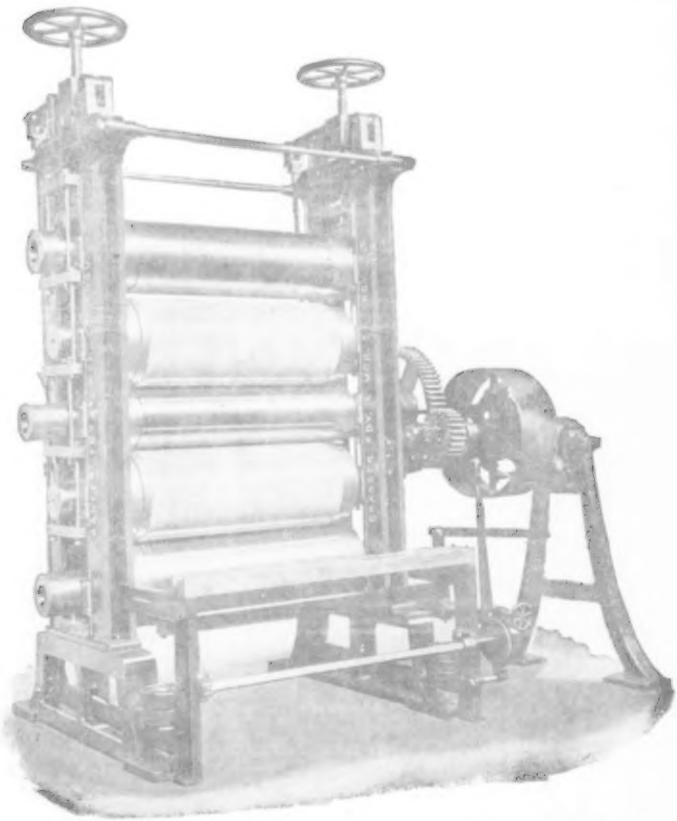
GUILD & LORD,
PUBLISHERS.

95 SOUTH STREET,
BOSTON, MASS.

Bleaching, Dyeing, Drying,

And Finishing Machinery.



CALENDERS, MANGLES AND ROLLS.

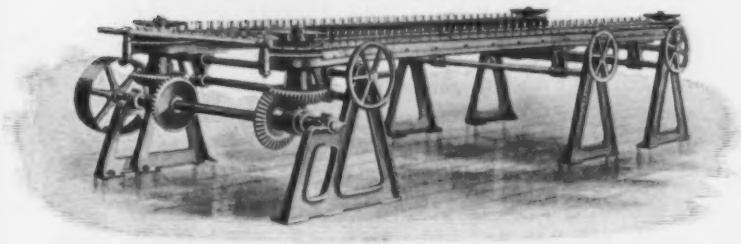
TENTERING MACHINES,
MERCERIZING MACHINES.

Granger Foundry and Machine Co.

PROVIDENCE, R. I.

Bleaching, Printing, Dyeing and Finishing Machinery

For Textile Fabrics.



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VIBRATORY (or Swiss) MOTION FOR LAWNS, ETC.

RETURN (8, 10 or 12) returns FOR WORSTED AND WOOLEN GOODS.

HOT AIR (2 or 4 returns) FOR GINGHAMS, ETC.

AUTOMATIC CLAMPS (Patented). SPRING CLAMPS. PIN CHAINS.

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LOWELL, MASS.,

Builders of

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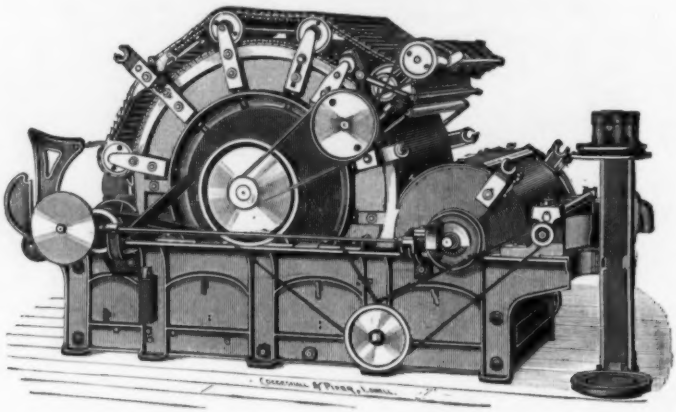


Revolving Flat Cards, Railway Heads,

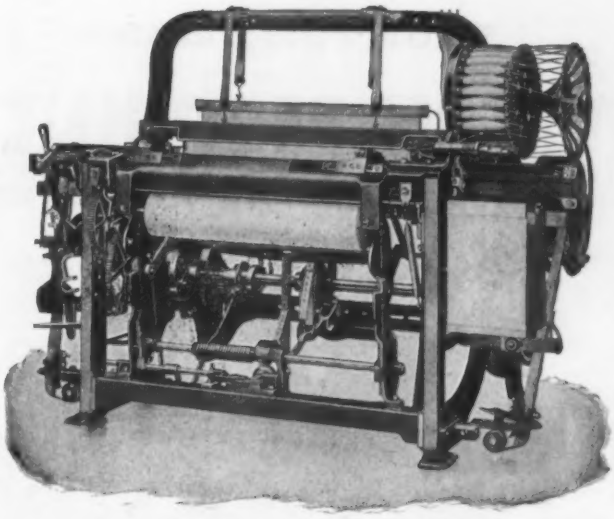
Ring Spinning Frames, Fly Frames,

Drawing Frames, Spoolers, Warpers,

Slashers, Looms.

Worsted Machinery.

ILLUSTRATED CATALOGUES SENT ON APPLICATION.



OUR LATEST

NORTHROP LOOM

Although our order list lengthens and strengthens, we do not adopt the simple and inexpensive plan of building without change, but continually add improvements whenever possible. A careful study of the above illustration will prove of interest to adepts in the Art of Weaving.

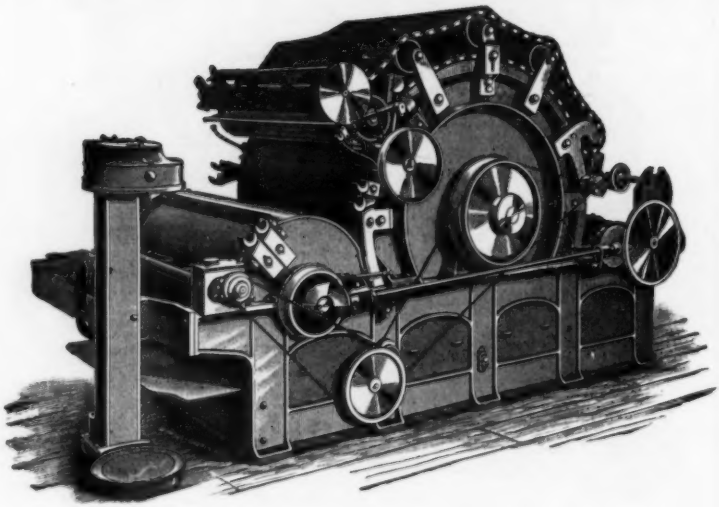
THE DRAPER COMPANY,

Hopedale, Mass.

MASON MACHINE WORKS,

TAUNTON, MASS.

COTTON MACHINERY



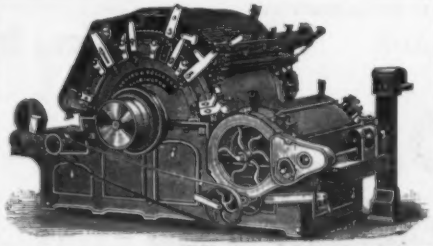
Cards, Combers, Lappers, Railway Heads, Drawing Frames, Spinning Frames, Mules and Looms,

INCLUDING THE

Mason-Northrop Loom.

SOUTHERN AGENCY:

D. A. TOMPKINS CO., Charlotte, N. C.



HOWARD & BULLOUGH

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LIMITED,

PAWTUCKET, - R. I.

Boston Office, 281 Congress St. Southern Offices, 814-815 Empire Bldg., Atlanta, Ga.

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The Simplest and Most Accurate. Greatest Production. Best Quality. Least Waste.

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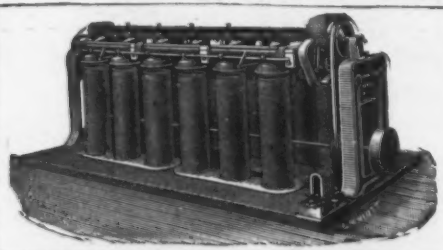

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Combined Self-Feeding Openers,

Breaker and Finisher Lappers,

All made from entirely new patterns and containing many valuable patented improvements.

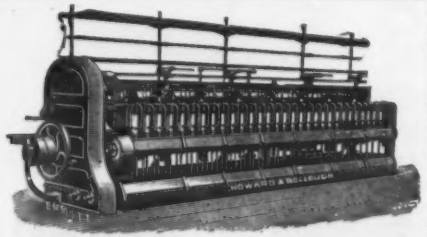
Slubbing, Intermediate, and Roving Machines.

New patented Differential motion, New Arrangement of Cone Drums, New System of Balancing top or bobbin rail, etc.

SPINNING FRAMES, CONE WINDERS,
TWISTERS, WARPERS AND SLASHERS.

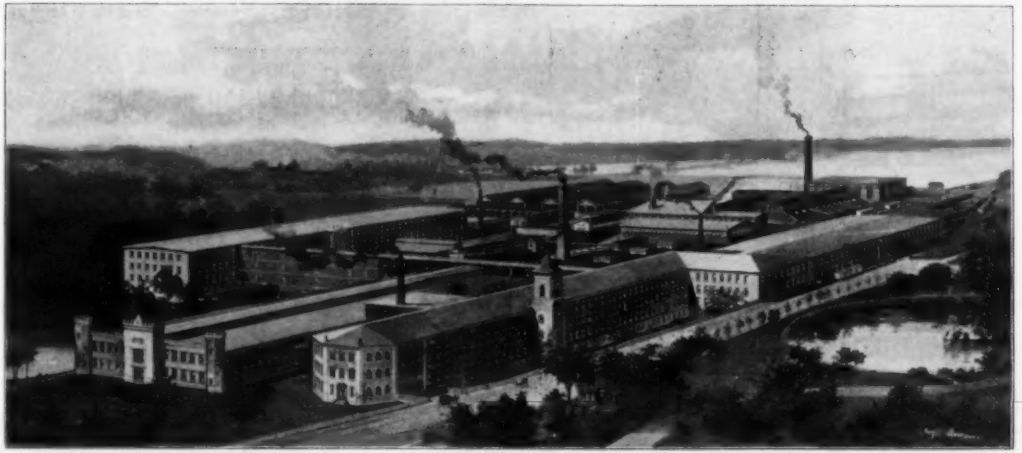
All parts of above machines are made by special tools and are exact duplicates.

We Invite Investigation and Comparison.



THE WHITIN MACHINE WORKS,

Whitinsville, Mass.



COTTON MACHINERY

Revolving Flat Carding Engines.

Sliver Lap Machines.

Ribbon Lap Machines.

Combers.

Railway Heads.

Drawing Frames.

Spinning Frames.

Spoolers

Twisters.

Reels

Long Chain Quilling Machines.

Looms.

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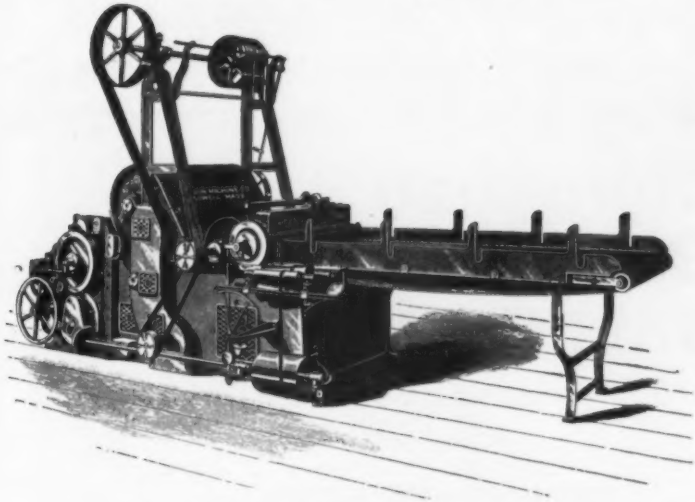
38 South Tryon Street, CHARLOTTE, N. C., and Equitable Building, ATLANTA, GA.

The Best Pickers.

In the Cotton Field nothing equals the
DARKY COTTON PICKER.



In the Cotton Mill nothing equals the
KITSON COTTON PICKERS.

KITSON MACHINE CO., Lowell, Mass.

Largest Builders of Cotton Openers and Lappers in the World.

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NEW ENGLAND BUTT COMPANY,

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BRAIDING MACHINERY,

All Styles and Kinds for Flat and Round Braids.

SOLID SASH AND CURTAIN CORDS.

Shoe and Corset Laces, Banding and all

BRAIDED FABRICS.

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THE LATEST AND BEST

LOOMS, DOBBIES, HARNESS MOTIONS

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POWER TRANSMITTING MACHINERY.
FREIGHT ELEVATORS. PATENT FRICTION CLUTCHES.

More than 3,000 Barber Knotters Sold During 1901.

THE BARBER KNOTTER.

Used for Spooling or Winding Cotton Yarns of all kinds.

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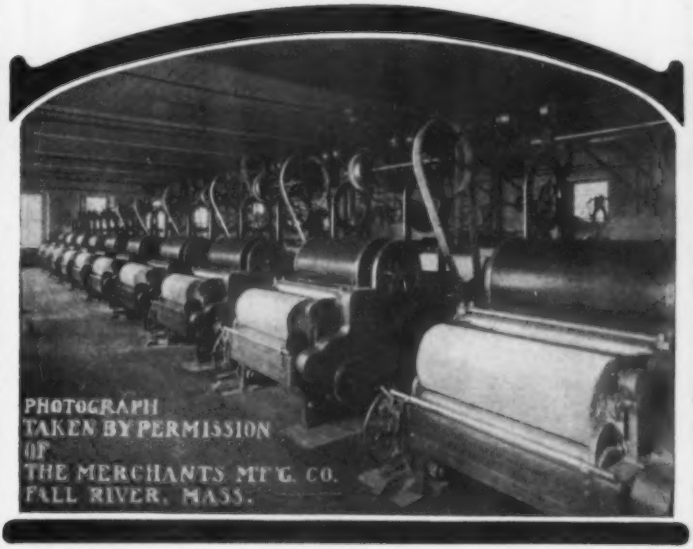
Boston.

ROBERT C WEBSTER, Mg

START RIGHT!

IN A RACE, THE RIGHT KIND OF A START FREQUENTLY DETERMINES THE FINISH.

SO IN MANUFACTURING COTTON, THE PREPARATORY MACHINERY IS ALL IMPORTANT TO THE FINISHED PRODUCT.



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THE RIGHT START MAY BE HAD BY USING THE A.T.ATHERTON PREPARATORY MACHINERY. BUILT BY

THE A.T.ATHERTON MACHINE CO.

PAWTUCKET, R. I.

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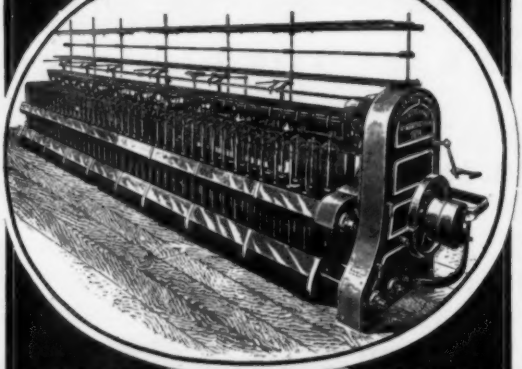
DRAWING FRAMES · SPEED FRAMES
· CARDS · · MULES ·



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CARD CLOTHING · WASTE MACHINERY

COTTON MACHINERY

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Card Room Machinery.
TAYLOR LANG & CO. LTD.
Self Acting Mules.
WILLIAM RYDER
Flyers.
C. CAIN, SON, & GREENWOOD,
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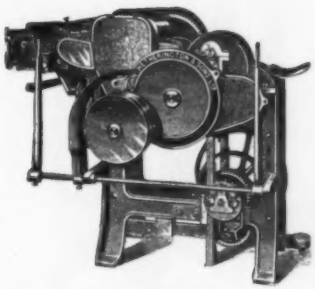
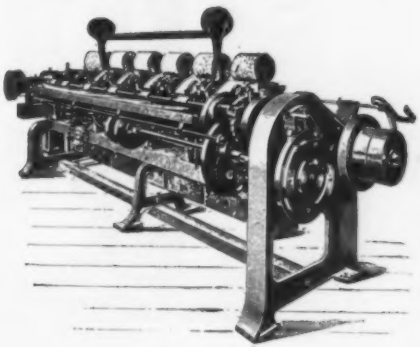
Machinery for Preparing, Spinning, Doubling Cottons, Cotton Waste, Woolen, Etc.

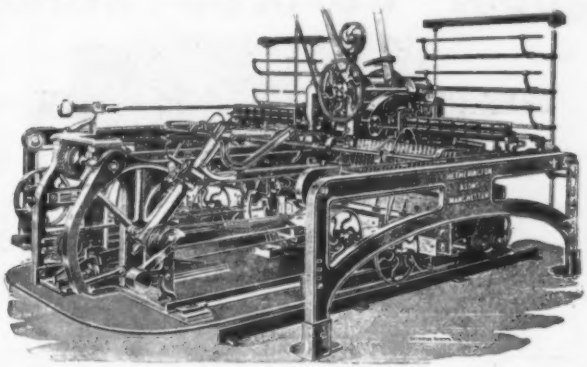




Sliver Lap Machines
with Self Acting Stop Motion.

Ribbon Lap Machines
with six Laps behind for preparing Laps for Combing Machines, made to suit any width of Laps required.

Combing Machines,
single and double Nip for six or eight heads, to take Laps from 7 1-2 in. to 10 1-2 in. wide. Patent Stop Motions for stopping Machine, when delivering too light Slivers, or after any required length has been delivered.



Patent Self Acting Mules (Hetherington and Curtis Patterns of Headstock) for coarse, medium and fine yarns.

Over Three Million Spindles at Work in the U. S.

SOLE IMPORTER FOR UNITED STATES AND CANADA,

STEPHEN C. LOWE, 41-42 BREWER BUILDING, 180 DEVONSHIRE ST. **Boston, Mass.**

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Our Portable Hoist

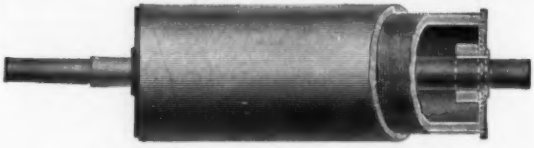
Is a Great Labor Saver.

KNUCKLE JOINT PRESS. WITHOUT KNUCKLE JOINT.

It is designed especially for piling cases, bales and heavy packages, or elevating them through a door or opening. A man can lift 800 pounds with it. It is easily handled and while strong and substantial can be rolled around at will. Many mills are using them.

JOHN E. LARRABEE, Amsterdam, N. Y.

Rubber Covered Rollers



That are successfully adapted

FOR ALL PURPOSES IN WOOLEN AND COTTON MILLS.

Our Rubber Coverings are strictly high grade. Thousands of users find them satisfactory and economical.

...CORRESPONDENCE SOLICITED...

When it's anything about rubber ask us.

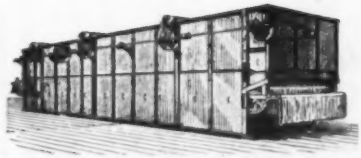
BOSTON BELTING CO.,

James Bennett Forsyth, Mfg. Agt. and Gen. Mgr,

Makers of MECHANICAL RUBBER GOODS.

BOSTON, 256 Devonshire Street. NEW YORK, 100 Reade Street.

"CYCLONE" DRYERS



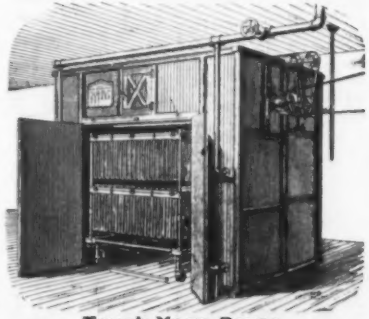
Automatic Yarn Dryer.

For Hosiery, Underwear, Yarn, Cotton Stock, Wool, etc.

CARBONIZING MACHINES,

YARN SCOURING MACHINES,

BREASTS, BURRING MACHINES



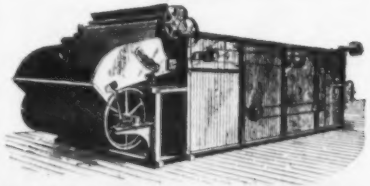
Truck Yarn Dryer.

FEED ROLLS, LICKERS-IN.

Phila. Textile Machinery Co,

Hancock and Somerset Sts.,

PHILADELPHIA, - PENN



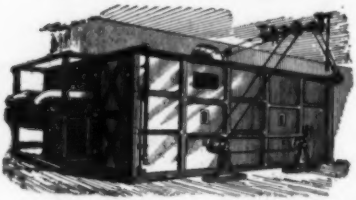
Automatic Cotton Stock Dryer.

GARNETT MACHINES

"HURRICANE" DRYERS

—FOR—

WOOL, COTTON, HAIR, YARN, STOCKINGS, UNDERWEAR, &c.



Automatic Stock Dryer for Cotton and Wool.

CARBONIZERS,

Yarn Scouring Machines.

"HURRICANE" FANS

for Ventilating and Drying.

Best in Construction. Lowest in Price

Plans, Estimates and Catalogues sent upon application.

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Saco and Pettee Machine Shops,

NEWTON UPPER FALLS, MASS., U. S. A.

COTTON MACHINERY

PICKERS, SLUBBING, REVOLVING FLAT CARDS, INTERMEDIATE AND ROVING FRAMES, RAILWAY HEADS, DRAWING FRAMES, SPINNING FRAMES, SPOOLERS.

SHOPS: Biddeford, Me. Newton Upper Falls, Mass.

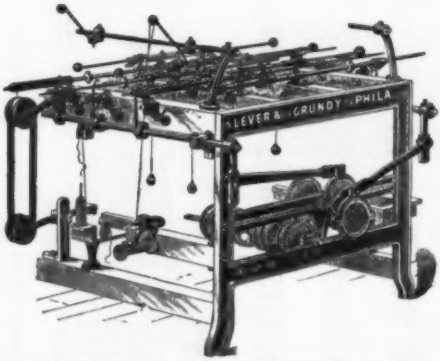
Southern Agent: A. H. WASHBURN, Charlotte, N. C.

OSWALD LEVER,

Formerly LEVER & GRUNDY

BUILDERS OF

TEXTILE MACHINERY.



FILLING COP WINDING MACHINES. Spindles driven by belts or by gears. To wind cops. Cops to weave from the inside, or butts to weave from the outside. Can be made to wind any kind of filling from the coarsest to fine numbers. These machines will put the most yarn in as given size of shuttle than any other machine in use.

BANDLESS SPINDLE SPOOLING MACHINES. Adapted to the finer grades of yarn and to the finest silk.

PRESSER DRUM SPOOLING MACHINES. Arranged to spool in any way the trade requires.

BANDLESS VARIABLE SPEED MACHINES. To wind the large bobbins used in knitting mills.

CONICAL and STRAIGHT TUBE WINDING MACHINES.

DRESSER SPOOLING MACHINES.

Beaming Machines, Sectional Warp Mills, Chenille Cutting Machines, Reeling Machines to prevent waste at the bottom of mule bobbins.

Lehigh Ave. & Mascher St., PHILADELPHIA, Pa.

Fabric Measuring and Packaging Co.

Postal Telegraph Building, Broadway and Murray Street, New York, U.S.A.

Midnight Fast Black

"Amisilk"

Pickaninny Fast Black

Accurate Measurement. Print Measurement and Trade Mark Automatically Every Yard.

OUR MACHINES PRINT TRADE MARKS

ON COTTONS, WOOLENS, CARPETS (Single and Double Widths.)

We lease and license our machines to measure and imprint the measurement upon fabrics, fold the same lengthwise and roll into merchantable packages all in one operation.

PAID UP LEASES ISSUED.

A PERFECT PIN TICKET

For Cloth Samples and Garments.

Easily and quickly applied to fabrics of any weight.
Securely attached and yet easily detached if necessary to remove.
The machine does the whole thing.
It is cheap, serviceable and durable.

We also make a machine which

PRINTS the TICKETS as they are attached if desired.

Send for particulars to

SARANAC ELECTRICAL MFG CO.,

ST. JOSEPH. MICH

NATIONAL MILL SUPPLY CO.,

MANUFACTURERS OF

SILK MACHINERY

AND

CUTTERS OF RIBBON, TICKER AND BEAMING PAPER.

P. O. Box 1788. PATERSON, N. J.

SHAW'S VICTOR TRAVELERS

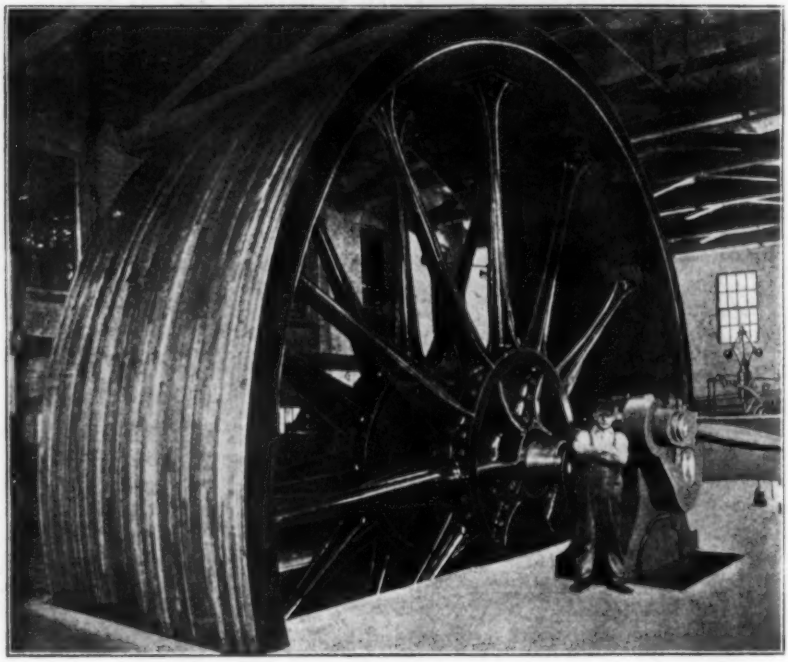
MANUFACTURED BY

Victor Shaw Ring Traveler Co.

Incorporated 1899

23 SABIN STREET. PROVIDENCE, R. I

The Amoskeag Fly-Wheel.



Announcement. It gives us pleasure to inform you that we have recently completed arrangements with the Amoskeag Manufacturing Company, of Manchester, N. H., in accordance with which we have taken over their wood-rim pulley department, including the fly-wheels as designed by Mr. Charles H. Manning, their Superintendent, and in this connection he has consented to act as our consulting engineer.

As to Construction.—In the construction of the fly-wheel shown in our illustration, width is 30 ft. diameter, the arms are so designed that each one will safely carry the belt-strain coming on its half of the wheel if the other eleven arms were entirely relieved, and the bolting of the hub is sufficient to carry its portion of the rim if cut adrift from the remainder of the rim

The rim is built up in courses of thoroughly kiln-dried wood of from 3 to 4 inches in thickness. The butts in each course are left open ¾ of an inch at the outer ends, and well-fitting hard wood wedges are driven in on hot glue, with a heavy sledge, as are also the hard-wood keys between the outer ends of the arms and the rim Each piece in every course is thoroughly glued and secured in place with 3½-inch lag bolts.

As to Safety.—Compared with iron, the wood rim is ten times safer than the cast-iron *when* the castings are good. This allows the wood-rim pulley to increase its speed to 3.25 times that of a sound cast-iron one, with equal safety.

As to Weight.—A fact not generally known is, that nearly all large cast-iron wheels which serve as balance wheels on steam engines are much heavier than is really necessary, owing to the great difficulty of constructing such large wheels from light castings. Builders are obliged to make the segments very thick to insure good castings and to allow sufficient stock for finishing, and are generally sure to make all parts heavy enough to meet those ends, hence they get wheels that are too heavy.

A wood-rim wheel, constructed in the manner shown in our illustration, is heavy enough for regulation, and yet many times stronger than an all-iron wheel.

We invite your attention to the consideration of this method of construction when accidents, contemplated changes, or other reasons interest you, and we will be pleased to give further information on request.

CHASE PULLEY COMPANY,

201 Pitman Street, Providence, R. I.

As Manufacturing Engineers

OUR MISSION ON EARTH
IS TO DESIGN, MANUFACTURE AND
INSTALL

Complete Power Transmission Equipments

FOR THE FACTORY, MILL OR
POWER HOUSE

We are enabled to give prompt and personal attention to every inquiry. Capable engineers, located both at this office and the various branches enumerated below, are ready at a moment's notice to advise and submit estimates of cost upon such proposed outfits as may be required.

Our facilities are the largest in the world in this exclusive line of manufacture, with equipment thoroughly modern, thereby enabling the execution of orders to meet any requirement.

Our line embraces every good thing in Power Transmitting Appliances. Constant improvement is our watchword, with the abstract fact always kept in view of securing the reduction of fractional losses to the minimum in these devices.

An experience of twenty-three years has taught us how to secure the maximum from the minimum—that is, the maximum of effective power transmitted from the minimum of coal pile energy, a fact we shall be pleased to demonstrate.

We originated the "Independence" Wood Split Pulley, now universally used the world over. We were also the pioneer manufacturers and patentees of the "Dodge" American System of Manila Rope Transmission—acknowledged as the most economical and modern means of transmitting and distributing power. We have installed thousands of these drives.

When contemplating improvements to your works, or the erection of new plants, we will be pleased to co-operate with you and advise as our experience dictates.

The Dodge Manufacturing Co., Mishawaka, Ind.

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137-9 Purchase St. Boston	45-45 Dey St. New York	166-174 S. Clinton St. Chicago	128 W. 3d St. Cincinnati, O.	24 Garlick Hill London, Eng.

Prudential Building, Atlanta, Ga.

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Entire Outfits for New Mills, or small and odd items that you don't know just where to obtain, can be found at the

AMERICAN SUPPLY CO.
PROVIDENCE, R. I.

in Mill Supplies.

E. Dixon. Established 1876. F. M. Dixon.

DIXON LUBRICATING SADDLE CO., BRISTOL, R. I.

Sole Manufacturers of

Dixon's Patent Locking Saddles and Stirrups

The weight can be taken off and put on to the middle rolls, without stopping your frames, when long staple cotton is used.

The Stirrup is always in place.

No bent stirrup resting on rolls.

Manufacturers of all kinds of **Saddles, Stirrups and Levers.** Send for Samples and Prices.

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MAKERS OF

Looms for Plain and Fancy Weaving.

Represented in the South by SEXTON & ROBBINS CO., CHARLOTTE, N. C.

SPINDLES AND FLYERS.

For Cotton, Woolen, Worsted, Silk and Flax Machinery.

Also Steel Caps, Bolsters, Steps, Tubes, etc.

WARD & VANDEGRIFT,

Formerly with Bridesburg Mfg Co.

ELMER, Salem Co., N. J.

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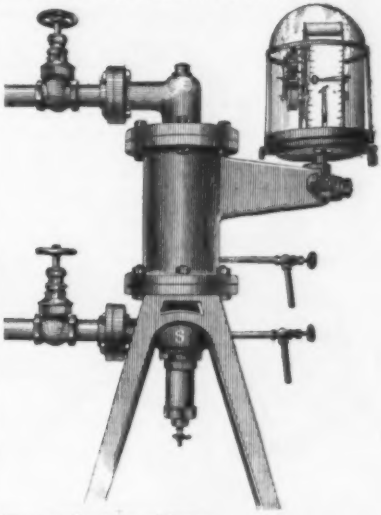

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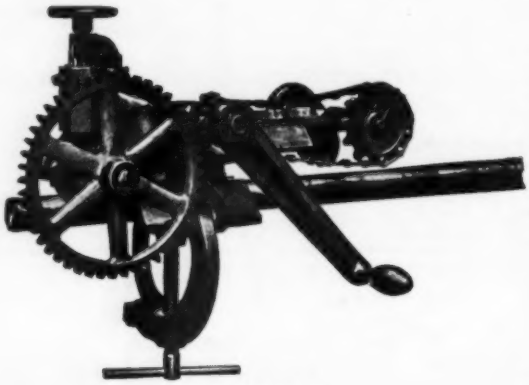

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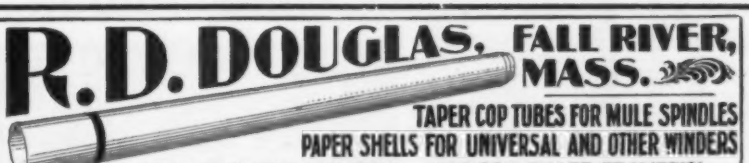

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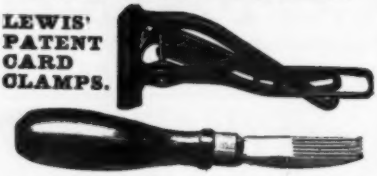

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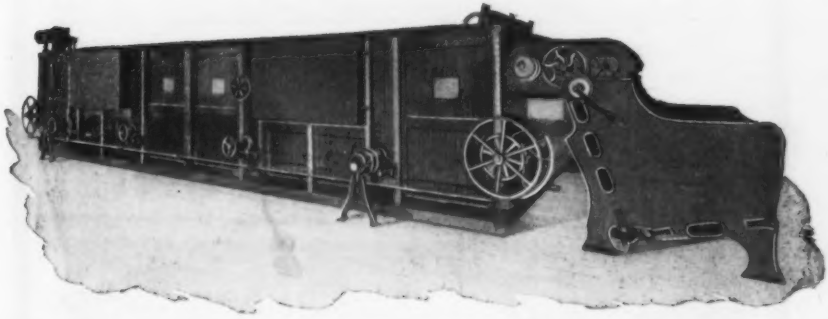

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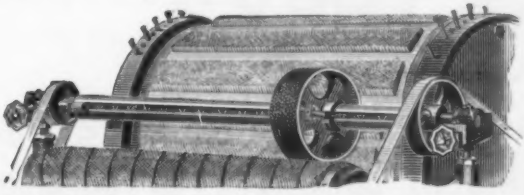

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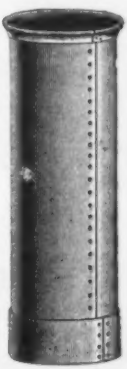

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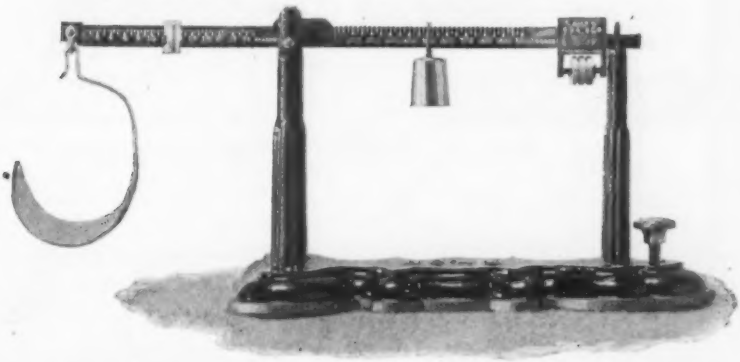

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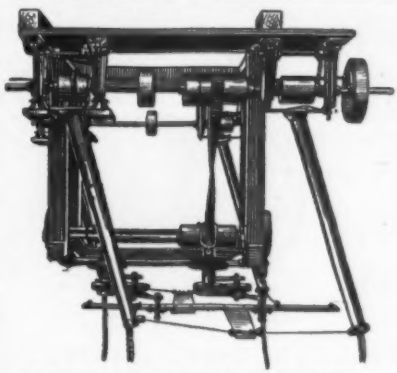

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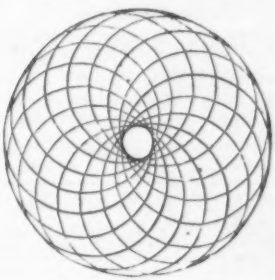

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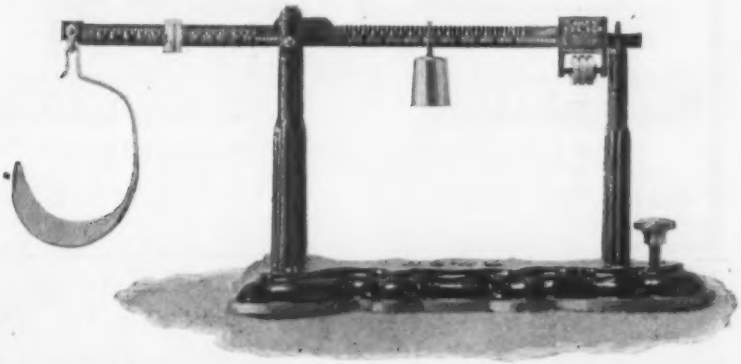

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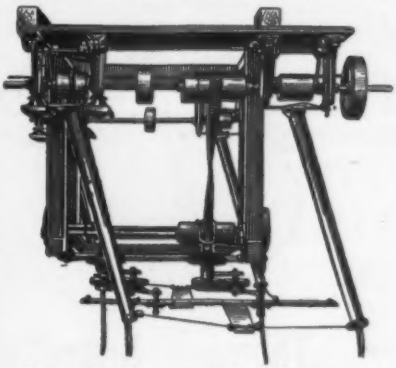

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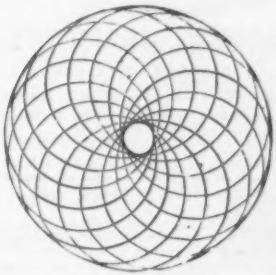

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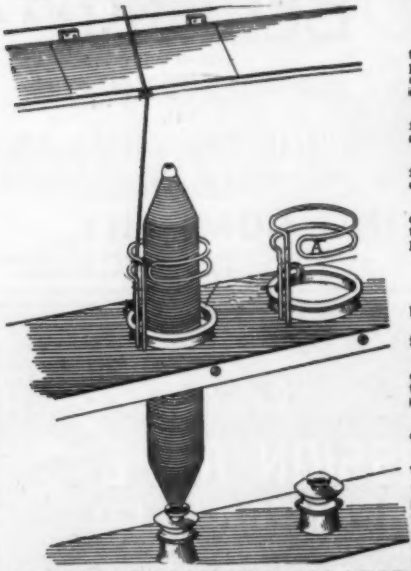

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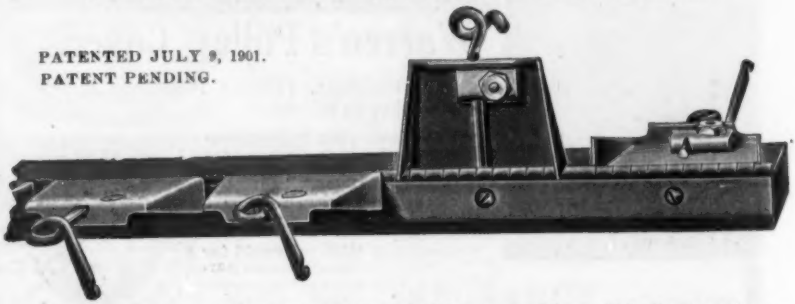

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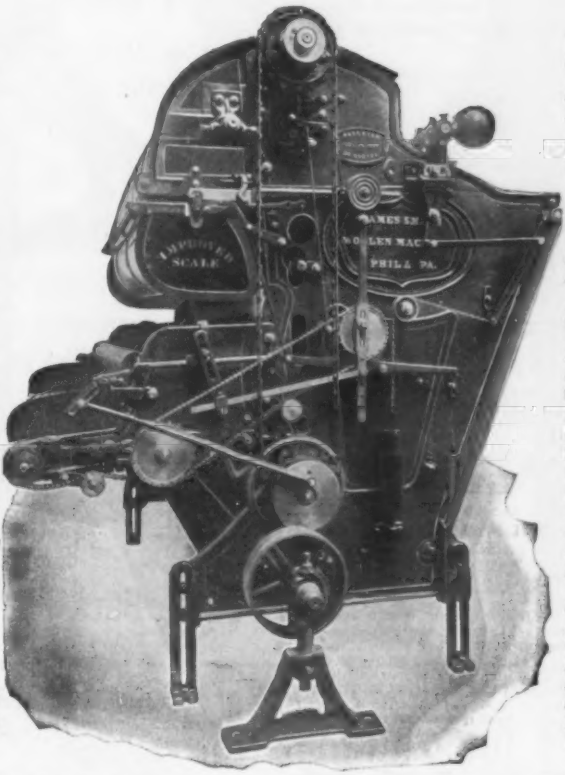

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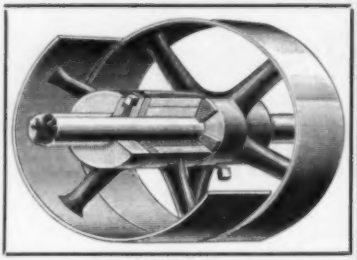

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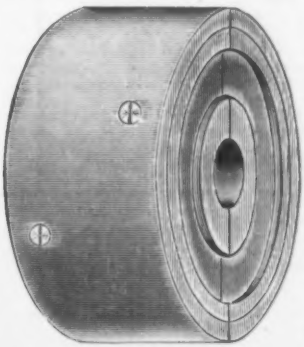

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Textile Patents.

Issued Dec. 31 1901, Jan. 7, 14, 21, 1902.

Circular Loom. 690,355. Charles N. Brown, Boston, Mass., assignor of one-half to James S. Wilson, Chelsea, Mass.

Device for Removing Burrs from Wool. 690,178. Leonard Offerman, Leipzig, Germany.

Doffing Machine for Ring Spinning Frames. 691,677. Joseph E. Tichon and Henry S. Foster, New Bedford, Mass.

Feeding Device for Carding Engines. 690,260. Daniel C. Fisher, Boston, Mass., assignor to the Woonsocket Machine and Press Company, Woonsocket, R. I.

Hot-Air Silk Rolling Machine. 691,457. John P. Everitz, San Diego, Cal.

Knitting Machine. 690,156. Otto Lamwers, Paterson, N. J., assignor by direct and mesne assignments to L. Voelkner and Rosa Lamwers, Paterson, N. J.

Knitting Machine. 690,157. Otto Lamwers, Paterson, N. J., assignor by direct and mesne assignments to L. Voelkner and Rosa Lamwers, Paterson, N. J.

Loom. 690,038. Frederic H. Simes, Milton Mills, N. H., assignor of one-half to John E. Townsend, Milton Mills, N. H.

Leno-Selvage Motion. 691,204. Horace H. Sutcliffe, Philadelphia, Pa.

Machine for Lacing Jacquard Cards. 690,615. Vernon Royle, Paterson, N. J.

Process of Waterproofing Fabrics. 690,868. James Menzies, London, England.

Quoin Lock. 690,911. George F. Peck, Brooklyn, N. Y.

Self-Threading Loom Shuttle. 690,177. James H. Northrop, Tustin, Cal., assignor to the Draper Co., Hopedale, Mass., a corporation of Maine.

Spool Holding Frame. 691,287. Phlancy D. Morton, Limoyne, Ohio.

Spinning or Twisting Machine. 690,634. Leon W. Campbell, Woonsocket, R. I.

Spinning or Twisting Machine. 690,694. Leon W. Campbell, Woonsocket, R. I.

Splicing Mechanism for Knitting Machines. 691,686. Frank Wilcomb, Norristown, Pa.

Tension for Knitting Machines. 690,775. George W. Ruth, Norristown, Pa.

Tension Regulator for Spinning or Twisting Machines. 691,594. Arthur C. Butler, Wollaston, Mass.

Woven Pile Fabric. 691,193. William T. Smith, Philadelphia, Pa.

Warp Stop-Motion for Looms. 690,636. Joseph Coldwell and Christopher G. Gildard, Fall River, Mass.

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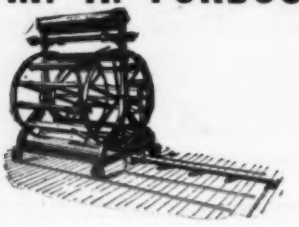

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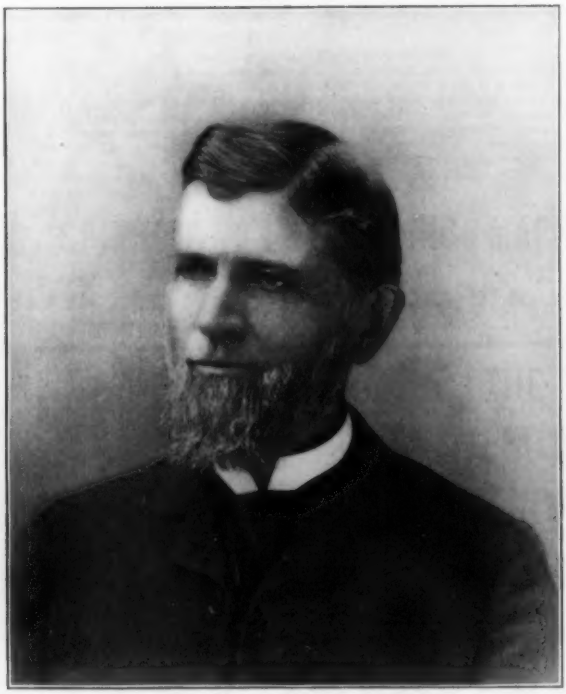


JOSIAH PERRY.

TEXTILE WORLD.

Vol. XXII. FEBRUARY, 1902. No. 2.

JOSIAH PERRY.

Josiah Perry was born March 14th, 1832, in what is now the manufacturing village of Perryville, Mass. His grandfather, after whom he was named, bought land and settled there in 1773. Fifty-two years later Mr. Perry's father, with three nephews, Abner, Wyman and Richard Perry, and Danforth Upham, built a log dam and a mill on the stream running through the farm, and began the manufacture of satinets. In 1832, Abner withdrew and built a small custom mill on a side stream where he carded rolls for hand spinning. A short time after, Joseph's other partners withdrew, and Charles Carpenter bought an interest in the business. The new firm ran the mill for over thirty years, or until 1863. In 1857 the mill was destroyed by fire and rebuilt without delay.

During this period the young Josiah worked in the mill out of school hours, and in 1852 took charge of the weave room, remaining in this position until 1858. His wages as overseer of weaving were $1.25 per day. This amount was later advanced to $1.50. Board was $1.50 per week for men, and $1.25 for women. The hours of labor were long. In summer work was begun at 5 a. m. At six o'clock, one-half hour was given for breakfast. At 12 m., a half hour was allowed for dinner, and work then continued until 7 p. m., making 13 hours per day. Work ceased on Saturday at 5 p. m. In winter breakfast was taken before starting work, which began at 6.30 a. m. and, with the exception of a half hour for dinner, continued until 7.30 p. m. On Saturday the mill stopped at 4 p. m. While the wages were low and the hours long, living expenses were also low and, as Mr. Perry says, nothing could be done in those days except work and save money.

The methods of manufacturing at that time afford in other respects a striking contrast with those of today. The method of "trueing up" the card cylinders and rollers will illustrate this difference. A straight edge was adjusted lengthways on each side of the cylinder to be turned, and upon these edges a long plane, called a jointer, was placed. The cylinder was revolved and the plane vibrated by hand from one end of the roll or cylinder to the other, the position of the straightedge regulating the cut. In the weave room each loom was lighted with two petticoat lamps, one at each end of the loom; in the card room, owing to the danger from an open flame, lanterns were used. Rosin gas was introduced in 1857; the civil war, which began in 1861, raised the price of rosin from $1.50 to $25 per barrel. This forced the use of a refuse from coal tar for making gas until after the close of the war, when rosin was again used. Today the mills are lighted by electricity.

In 1858 Mr. Perry was placed in charge of the mill as superintendent. In 1861 a percentage of the profits was paid to him and to his brother Charles H. as part of their salaries. In 1863 Joseph H. Perry, their father, died. He had four sons, Geo. W. Chas. H., Josiah and Samuel, the latter dying in infancy. George W. died of typhoid fever at Warrenton, Va., in 1862, while in the service of the Union army.

After the death of their father, the two brothers, Josiah and Charles H.,

bought the interests of the other three heirs and that of Charles Carpenter. The new firm was styled Joseph H. Perry's Sons, and took possession about the first of January, 1864, one year before the close of the war. They made satinets for about a year, when cotton became so expensive that a change was made in 1865 to all wool goods. At that time a cotton warp with 1600 ends of single 16s yarn cost 26 cents per yard, or at the rate of over $2.00 per pound. The change of product necessitated extensive changes in the weaving and finishing machinery. The old cam looms were thrown out and Crompton narrow looms took their place.

Mr. Perry was married in 1862 to Miss Martha J. Elliot. They have had three children, Mary Josephine, who is now Mrs. Eben G. Parsons, Fanny Elliot, who is not living, and Anna Larned.

In 1869 Charles was thrown from a sleigh and killed. Josiah purchased the interests of his heirs and has been sole proprietor since that time. In 1872 he began the manufacture of a double and twist fabric in imitation of worsted. A high reputation was gained on these goods, and the mill ran on them for many years. Mr. Perry was among the first to use silk and worsted in striped goods; this was about 1872. In 1882 he began substituting Knowles broad looms for the narrow looms, and by 1885 all of the three-quarter looms had disappeared. With the exception of a few sets of cards, all of the machinery in the mill in 1857 had been thrown out to make room for improvements, and today the plant is compact and well equipped in all respects.

Mr. Perry is still at the head of the business and takes an active part in its management. Of late years, however, he wisely devotes more time to leisure and recreation, and the active management of the details of manufacturing has been placed on the shoulders of his son-in-law, Eben G. Parsons, who superintends the mill.

GENERAL VIEW OF PERRYVILLE, MASS.

The village of Perryville is a superior type of the New England factory village. The ownership of the property has continued for one hundred and twenty-nine years in one family, and, during the past seventy-seven years, they have operated the mills there without interruption. The friendly relations of those early days, when the mill owner and employee worked side by side, have been retained up to the present time. This is due in large measure to the character of the present proprietor, who is

personally identified with both the old and the new factory systems. The friendly feelings and mutual sympathy between mill owner and mill hand is a living force there today, and at the same time no mill can boast of more progressive up-to-date methods of manufacturing cloth to clothe the million. And while all this is true, it can also be said that there is no objectionable air of paternalism about the place, so often noticed when a whole village is the property of one man. The conditions here in this little village may be studied with profit as showing how the good of both the old and the new factory systems have been combined.

RESIDENCE OF JOSIAH PERRY, PERRYVILLE, MASS.

The credit for this is due to the common sense, shrewdness, and democratic character of Josiah Perry. He is a plain, unassuming, companionable man and a successful manufacturer. He has represented his district in the State Legislature, and in 1900 was elected Presidential elector, casting his vote for the late President McKinley.

—We always love those who admire us and, we never love those whom we admire.—La Rochefoucauld.

REFORMING THE METHODS OF MEASURING.

The evils attending the confusion of tongues as found in the use of so many languages and dialects throughout the world has caused scholars in all ages to dream of a universal language by which all people could understand each other. A similar diversity exists in the world's standards or units of weights and measures, and here also the evils of the present methods and the benefits of the use of a common system are admitted by all. It is also generally agreed that a common system should be based upon the decimal method of computation, such as is now employed in the United States system of coinage and in the metric system of weights and measures, which is now proposed as a world standard.

The metric system of measures would be of great benefit to the textile industry by giving a single standard throughout the world and by reason of the facility it affords for making calculations. We now have not only the diversity in measure common to all industries, but also a wide variation in the standards peculiar to

the textile industry itself. This is well illustrated in the case of yarn numbering. Each branch of the textile industry, cotton, silk, woolen, worsted, linen and knitting, has not only one, but several systems peculiar to itself. It is by no means uncommon to find mills in the same town, making the same class of goods and using different methods of yarn numbering.

In addition to this diversity in each country, there is the difference in the systems of different countries, which adds still greater complications. Volumes might be filled with illustrations taken from the textile mills, showing the vast superiority of a common metric system of weights and measures over the many diverse methods now in use. Single examples, no matter how striking would fall short of conveying an adequate idea of the handicap under which the industry is now laboring.

While there is no doubt of the advantage of a metric system, when once established, there are many great difficulties in the way of making the change. Everyone uses weights and measures. The standards we are now using, with all their defects, are welded into the life of every individual as thoroughly as spoken language itself. It is, to be sure, a comparatively easy matter for an educated man, trained in some special branch of science, art or industry, to familiarize himself with a new system of indicating weights and measures, but the great obstacle to bringing about the change is the fact that millions of the "plain people" use the old system and cannot be brought to use a new one. Weights and measures come very "near to men's business and bosoms." They furnish the scale by which wages are largely regulated; by which purchases and sales are made; by which the work of the people is measured. Strongly as one may be convinced of the advantages of a common decimal system throughout the world, the difficulties in the way of bringing one into use are so vast as to well give its advocates pause.

A proof of how intimately the system of weights and measures is connected with the everyday life of the people was furnished during the past month by a mill in New England in which a new yarn scale was substituted for the old scale that had been used for years in the spinning room for weighing the yarn. There was, doubtless, no desire on the part of the mill management to alter the wages of the help, the sole object of making the change having been to correct the inaccuracy of the old standard and bring it into harmony with the general system in the many other mills operated by the same company. Nevertheless, the change of the scale without a corresponding change of the price list caused a reduction of wages as effectually as a straight cut of the price list. A strike of the spinners followed and for a time threw over a thousand hands out of employment. This incident can be used as an argument for the use of one common standard. It is, at the same time, a good illustration of what disturbance is bound to accompany any attempt to change from one system of weights and measures to another.

The past as well as the present and future must be considered. The experience and records of the past form some of the people's most valuable assets. No trade or industry could be carried on for an instant without the experience of men and women. This experience has been gained under the old system of weights and measures, and a new standard cannot be substituted here. Men will live and die with their ideas inseparably connected with the system of weights and measures under which these ideas were acquired, and these ideas are constantly referred to in the daily occupations of the people. We will cite one case illustrating this point. In the early seventies a disarrange-

ment of the yarn scale in a worsted mill resulted in an error of about 10 per cent., by which the yarn called 36s was actually but little over 32s. At the time and for many years after the product of this mill was but slightly diversified and but few changes were made in the size of the yarn spun. For this reason the error remained unnoticed or, if known, was not a cause of trouble and remained unchanged. During this period the owner purchased wool for No. 36 yarn as spun in his mill. He became acquainted with the quality required for his 36s yarn, which, as a matter of fact, was coarser than the grade required for an actual 36s.

In the course of time the change of fashion necessitated a more diversified product. New fabrics were designed; both finer and coarser yarns were spun, and it became necessary to correct the scales. This was easily done, but the ideas as to wool and yarn sizes acquired by the mill owner during twenty-five years' experience with scales that indicated 36s when the yarn actually was but 32s could not be changed. The result was the purchase of wool that could not be spun to the size required. Following failure to spin the yarn to the count for which it was selected came the conviction in the mind of the proprietor that the efficiency of machinery or help was behind that of years ago. Here again we find an argument for the new system and also an equally strong one against making changes in established methods.

The fact that the old system is found in the records of industrial establishments is another reason why an immediate abandonment of these old ideas of measurements is not possible. These records are of great value to a mill and are constantly referred to. Not infrequently the change of fashion renders it necessary to refer to the construction of fabrics that have been forgotten for years. The old system is bound to stay with us.

Every operative in our mills would be effected. The cartman hauling wool to the mill is told that the average weight per bag is 54 kilograms, and must load up accordingly. The wool sorter is told that he will receive 88 cents per hundred kilograms for sorting wool. The dyer receives an order to color red, 115 kilograms of wool of a shade for which his old formulas are based on pounds and ounces. The picker man is ordered to prepare an emulsion of oil and water made up with 5 liters of water to each three liters of oil, saponified with 2 kilograms of borax for each 20 liters of the mixture, and to apply nine liters of the emulsion on each 50 kilograms of stock. The spinner is told that he will be paid 17 cents per hundred kilograms for spinning metric No. 10 woolen yarn. The weaver is informed that 8 cents per meter will be paid for weaving cloth with 20 picks per centimeter. The finisher is informed that a fabric will lose about 20 per cent. in weight, that the cloth weight, 508 grams per meter from the loom, and should weigh 428 grams per meter when finished and that the woven pieces average 48 meters in length; he then must calculate how many centimeters per meter and meters per cut the goods must be shrunk to give the required weight per meter.

This is the everyday language of operatives in a mill in which the metric system is used, and will give to all who are familiar with the terms in use today an idea of the radical changes called for.

In the textile industry the inconvenience attending the use of different systems of yarn numbering has been lessened to a large extent by the use of comparative yarn tables showing the equivalent expression of each size of yarn in each of the other systems of numbering, including the metric. One of the most complete tables of this kind was compiled and published by this journal, and in this issue appears a supplementary table in

which the even metric sizes of yarn are placed side by side with their equivalents in the other systems in use in this country. Such means of translating the different systems are peculiarly adapted to textile manufacturing, and, doubtless, are employed in other industries. They serve to familiarize people with foreign standards, and in this way may be considered an aid to the introduction of the metric system. At the same time such tables may act as an obstacle to the complete establishment of the metric system because of their simplifying the concurrent use of both the old and new standards.

We have not called attention to the reasons for using caution in undertaking this change in order to discourage attempts at reform, but to show what must be accomplished before the great benefits of the new system can be secured. The effect which the change is likely to have on each industry should be carefully investigated, and above all there should be a reasonable probability that the change can be effected in a reasonable time and without great disturbance. It is an enterprise in which partial success, resulting in the use of both old and new standards would be worse than total failure. Due consideration should be given to the claim that the reform is made impracticable by the resistance to it offered by the established practice of a rapidly increasing population now numbering 76,000,000, who are actively and extensively engaged in nearly every branch of industry.

In the course of time a common standard for weights and measures for the whole world will doubtless come into use, and the sooner the better. The forces that work for such unification are of a complex and in some respects opposing character. At present the extension of our foreign trade into countries using the metric system places our merchants and manufacturers at a disadvantage. The use of the metric system is thus forced upon our manufacturers and merchants and a sentiment is cultivated in its favor. Scientific men are now, as they always have been, strong advocates of the new system because they find it in use in Continental Europe where science and the arts have reached their highest development. Their influence is, therefore, thrown strongly in favor of a change. Scientific and industrial literature published abroad and studied by a limited number of our people serves to familiarize them with the new standards.

On the other hand, while we find ourselves brought into contact with the metric system to our disadvantage in our export trade, our competitors in this same field using this system, doubtless, find themselves similarly handicapped in competing with goods measured by our standard. Not to the same extent, perhaps, because they are in possession of markets from which we seek to drive them, but, nevertheless, the extension of our foreign trade carries with it a tendency to extend the use of our imperfect standard of weights and measures. If we were using the metric system our exporters and manufacturers would, doubtless, find it easier to comply with specifications of foreign orders and to copy the wares of their foreign competitors, but the deciding factors in securing business either at home or abroad are price and quality, not measurements by meters and kilograms, yards and pounds.

The relative resources of the different countries and the energy of their people are also involved. It is a question of a survival not only of the fittest system of weights and measures, but of the system in use by the fittest people. We find the Anglo-Saxon race inhabiting the richest portions of the earth and using the inferior system of weights and measures, and the great German, Latin and Slav races using the metric sys-

DIFFERENT YARN STANDARDS COMPARED WITH THE METRIC YARN SYSTEM.

Yards per pound.	Metric. 1000 Meters per Kilo.	Runs 1600 yards per pound.	Cotton. 840 yards per pound.	Worsted. 560 yards per pound.	Cut. 300 yards per pound.	120 yards weight in grains.	50 yards weight in grains.	25 yards weight in grains.	12 1-2 yds. weight in grains.	6 1-4 yds. weight in grains.
496	1	.3	.6	.9	1.65	1694	706	353	176.5	88.2
992	2	.6	1.2	1.8	3.3	847	353	176.5	88.3	44 1
1488	3	.9	1.8	2.7	4.9	563.7	235.3	117.7	58 8	29.4
1984	4	1.2	2.4	3.5	6.6	423.5	176 5	88.3	44 2	22.1
2479	5	1.55	3	4.4	8.3	338.8	141.2	70 6	35.3	17.7
2975	6	1.9	3.5	5.3	9.9	282 3	117.7	58.8	29.4	14.7
3471	7	2.2	4.1	6.2	11.6	242	100.9	50.4	25 2	12.6
3967	8	2.5	4.7	7 1	13 2	211 8	88.3	44 2	22 1	11.1
4463	9	2 8	5.3	8	14.9	188 2	78 4	39 2	19.6	9.8
4959	10	3 1	6	8.9	16.5	169.4	70 6	35 3	17.7	8.9
5455	11	3.4	6.5	9.7	18 2	154	64 2	32 1	16.1	8.1
5951	12	3.7	7.1	10.6	19 8	141 2	58 8	29 4	14.7	7.4
6447	13	4.0	7.7	11.5	21.5	130 3	54 3	27.2	13.6	6.8
6943	14	4.3	8.3	12 4	23 2	121	50.5	25.3	12.7	6.4
7438	15	4 7	8.9	13 3	24.8	112 9	47.1	23.5	11.8	5.9
7934	16	5	9.4	14.2	26.5	105.9	44.2	22.1	11.1	5.6
8430	17	5.3	10	15.1	28.1	99.6	41.5	20.7	10.4	5.2
8926	18	5.6	10.6	15 9	29.8	94.1	39.2	19.6	9.8	4.9
9422	19	5.9	11.2	16 8	31.4	89.2	37.2	18.6	9.3	4.7
9918	20	6 2	11.8	17.7	33.1	84 7	35.3	17.7	8.9	4.5
10412	21	6 5	12.4	18.6	34 7	80.6	33 6	16 8	8 4	4.4
10920	22	6.8	13	19.5	36.4	77	32.1	16.1	8.1	4.1
11406	23	7.1	13.6	20 4	38	73 7	30.7	15.4	7.7	3.8
11902	24	7.4	14.2	21 2	39.7	70 6	29 4	14.7	7.4	3.7
12397	25	7.8	14.8	22.1	41.4	67.8	28 2	14.1	7.1	3.6
12893	26	8.1	15.3	23	43	65 2	27.2	13.6	6 8	3 4
13389	27	8.4	15.9	23.9	44 7	62 7	26 1	13.1	6 5	3 2
13885	28	8.7	16.5	24.8	46 3	60 5	25 2	12.6	6.3	3.2
14381	29	9	17.1	25.7	47.9	58 4	24 3	12.2	6.1	3.1
14877	30	9 3	17.7	26 6	49.7	56 4	23 5	11.7	5 8	2.9
15373	31	9.6	18.3	27.4	51.3	54 7	22 8	11.4	5 7	2 9
15869	32	9.9	18.9	28.3	52 9	52 9	22.1	11.1	5.6	2.8
16365	33	10.2	19.5	29.2	54.6	51.3	21.4	10.7	5.4	2.7
16861	34	10.5	20.1	30.1	56 2	49.8	20.8	10 4	5.2	2 6
17356	35	10.9	20.7	31	57 9	48.4	20 2	10 1	5.1	2 6
17852	36	11.2	21.3	31.9	59.5	47	19.6	9 8	4.9	2 5
18348	37	11.5	21.8	32.8	61 2	45 7	19 1	9 6	4.8	2 4
18844	38	11.8	22.4	33 6	62 9	44 6	18.6	9.3	4 7	2 4
19340	39	12.1	23	34.5	64.5	43 4	18.1	9.1	4 6	2 3
19836	40	12.4	23 6	35.4	66 2	42.4	17.7	8 9	4.5	2 3
20332	41	12.7	24.2	36.3	67.8	41.3	17.3	8 7	4 4	2 2
20828	42	13	24.8	37.2	69.5	40.3	16 9	8 5	4 3	2 2
21324	43	13.3	25.4	38.1	71.1	39.4	16.5	8 3	4 2	2 1
21820	44	13.6	26	38.9	72 8	38.5	16.1	8.1	4.1	2.1
22315	45	14	26.6	39.8	74.4	37.7	15.7	7.9	4	2
22811	46	14.3	27.1	40 7	76 1	36.9	15.4	7.7	3.9	2
23307	47	14.6	27.7	41.6	77.7	36	15.1	7.6	3.8	1.9
23803	48	14.9	28.3	42.5	79.4	35.3	14 7	7.4	3.7	1.9
24299	49	15.2	29	43.4	81.1	34.6	14.4	7.2	3 6	1.8
24795	50	15.5	29.5	44 3	82.7	33 9	14.1	7.1	3.6	1 8
25291	51	15.8	30.1	45.1	84.4	33.2	13 9	6.9	3.5	1.8
25787	52	16.1	30.7	46	86	32 6	13.6	6.8	3.4	1.7
28283	53	16.4	31.3	46.9	87.7	31.9	13 4	6.7	3.4	1.7
26779	54	16 7	31 9	47.8	89.3	31.4	13	6.1	3.3	1.7
27274	55	17.1	32.5	48.7	90.8	30.8	12 9	6.5	3.3	1.7
27770	56	17 4	33	49 6	92.6	30.3	12 7	6.4	3.2	1.6
28266	57	17.7	33.6	50.5	94.3	29.7	12 4	6.2	3.1	1.6
28762	58	18.	34.2	51.3	95.9	29.2	12.2	6.1	3.1	1.6
29258	59	18.3	34.8	52.2	97.6	28.7	12	6	3	1.5
29754	60	18.6	35.4	53.1	99.2	28.2	11 8	5.9	2.9	1.5
34713	70	21.7	41.3	62	115.8	24.2	10.1	5.1	2.6	1.3
39672	80	24.8	47.2	70.8	132.3	21.2	8 9	4.5	2.3	1.2
44631	90	27.9	53.1	79.7	148.9	18.8	7.9	3 9	1.9	1
49590	100	31	59	88.5	165.4	16.9	7.1	3 6	1.8	.9
59508	120	37.2	70 8	106.2	198.4	14.1	5.9	2.9	1.5	.7

tem largely but not exclusively. On which side is the balance of these forces to be found? Another influence latent at present, in favor of the continuance of old standards is the fact that the great body of the people are satisfied with present conditions. They ask for no change; in fact, it is by no means unlikely that an attempt to force them by act of Congress to use a new system would evoke a violent protest or be met with a quiet refusal, which in one case would repeal the law and in the other render it futile.

Thus we find powerful and complex influences at work both for and against a change. We are unable to measure and strike the balance between them. It would be statesmanship of the highest order, however, to determine this balance of forces and then mass and direct individual and governmental influence to increase the existing balance no matter on which side it may be found and thus contribute to the adoption of a single standard for all nations. Thus massed and directed, individual and official influence may count for something. Directed against the current, however, individual effort and acts of Congress will prove as abortive as a law to compel our people to speak French after a certain date. Some things cannot be changed, even by act of Congress. The views here advanced are submitted for the consideration of the advocates of the two bills now before Congress for introducing the metric system into the United States. It is a question that might be profitably investigated by a competent commission before action is taken.

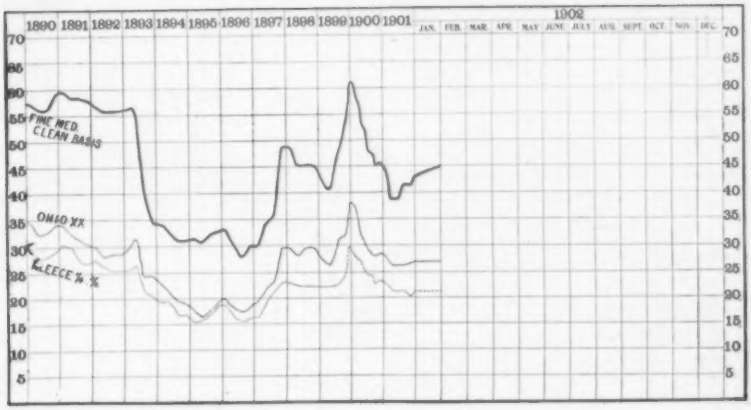
THE MANUFACTURE OF RAMIE.

The fact that the ramie fibre possesses so many excellent qualities make its manufacture into yarn and cloth a fascinating field for enterprise. Ramie is strong and durable. It is affected less by moisture than any other fibre. It is very long and can be separated to a great degree of fineness. It is highly lustrous, far exceeding linen or cotton in this respect, and, when colored, the lustre approaches that of silk. It is, however, lacking in elasticity.

In spite of its many good qualities, it has not been worked on an extensive scale into yarn and clothing, owing to the difficulty of decorticating the stalks and preparing the fibre for manufacture. This has restricted the supply of raw material and is the chief reason why the industry remains of small size.

There are a number of small mills in Europe, principally in France, where ramie is successfully spun. Large sums of money have been lost in this country, as well as abroad, in attempts to spin ramie, but these failures have been due, not to the fact that ramie cannot be spun, but to the lack of knowledge as to the correct method of working the material. This knowledge is jealously guarded by the comparatively few manufacturers of ramie in Europe.

There are a considerable number of people who are interested in this subject. This is indicated by the frequent requests addressed to us for information in regard to ramie. The fact is lost sight of by most of these investigators that spinning of the ramie fibre is not alone sufficient to ensure success. The plant grows rapidly and in large quantities in China and the East Indies, but until some cheap and efficient means of reclaiming the fibre from the stalk is discovered, ramie will remain too expensive for extensive use. We give on another page the views of M. Maxime Cornu in regard to the present state of the problem of decorticating ramie. M. Cornu was president of the Ramie Congress, held last year in Paris, and is professor of the Museum of Natural History, Paris. His views may be accepted as indicating the present state of the question, the solution of which would be of great benefit to mankind.



WOOL MARKET.

The strength of the wool market, which we noted last month, has since continued. The buying, while of moderate proportions, has been widely distributed, chiefly among the smaller concerns.

Conditions are such that any marked buying movement would cause an immediate advance in prices, as the stock of wool throughout the country has been greatly reduced by the steady consumption for the past year. There is certainly no reason to anticipate a decline and the grower is likely to receive prices for the new clip which will be satisfactory, at least to him.

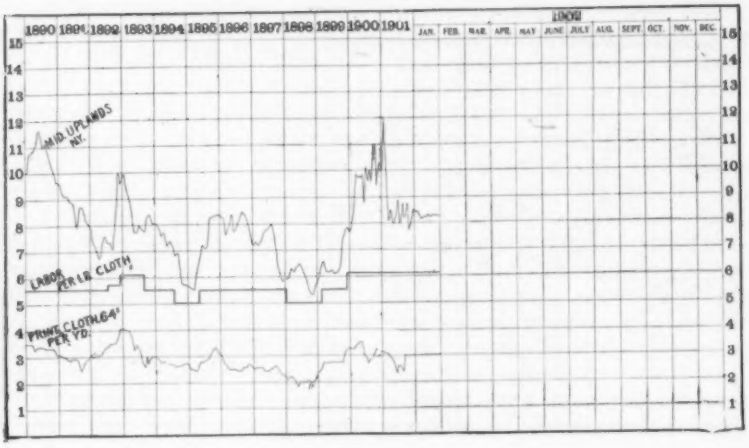
There is but slight indication of speculation, either at home or abroad. The dealers here are proceeding cautiously and as a rule are opposing the introduction of any artificial quality to the strength of a slowly rising market. Supply and demand are doing the work in their own way at present.

The rise is bringing wool prices to the point where the use of substitutes is stimulated. This fact is so generally recognized that it furnishes another reason for caution in pushing prices upward. A certain proportion of the people's earnings is available for the purchase of clothing. This amount is unusually large at the present time owing to the general prosperity of the country. Nevertheless, it cannot be increased above a certain sum, and this amount of money must purchase enough yards of cloth to clothe the wage earner and those depending on him for support.

This is what restricts the price of wool. The experience of the past few years has proved that the limit is reached when the market reaches a point at which fine medium territory brings 50 to 60 cents per pound.

The foreign market also has been strong and at the recent London sales an advance of 5 per cent. to 10 per cent. was secured. Cross-breds, which have suffered so severely recorded the greatest proportionate rise.

The review of the foreign market for wool and woolens that appears on another page of this issue, together with the chart showing fluctuations of wool prices abroad for a series of years, will give our readers a good opportunity of studying and comparing conditions in the home and foreign markets.


1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901
1902
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT OCT. NOV. DEC.
MID. UPLANDS AT
LABOR PER LB. CLOTH
PRINT CLOTH 64" PER YD.

COTTON MARKET.

The decline in the price of cotton during the month of January, indicated by our chart, has been due to the free movement of this staple from the South. While at this writing the shipments are smaller, this slackening is ascribed to the stormy weather and not to depletion of stock. The unexpected appearance of large quantities of cotton has strengthened the belief in a 10,500,000 bale crop.

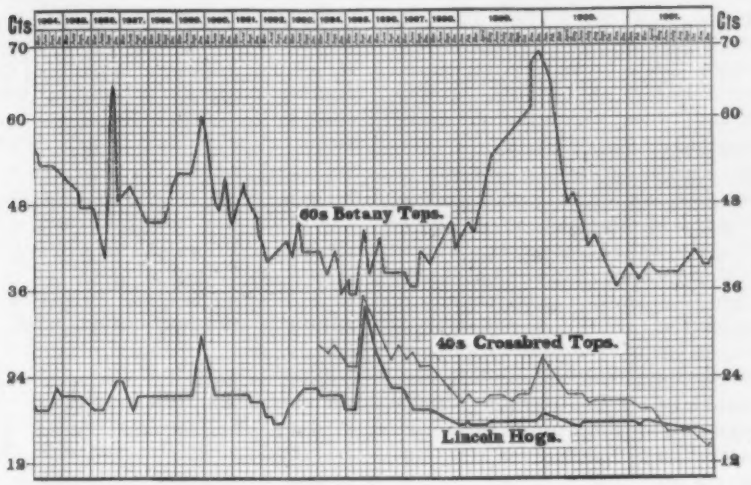
Reports from Europe are encouraging as regards the cotton goods market. The impression that English cotton mills were not in a prosperous state is not confirmed by their annual reports. Eighty-eight companies in the Oldham district, report a total profit for 1901 of $1,616,650, or $18,371 per mill; as compared with $17,075 for 1900; $22,030 in 1899; and $16,535 in 1898.

The figures compiled by Ellison indicate that the European consumption of cotton has been maintained at a satisfactory volume. For 1901, he places the weekly consumption in England and on the Continent at 151,404 bales. This is 1731 bales more than the estimate for 1900, and with the exception of 1898 and 1899, exceeds the consumption reported for any previous year.

The same authority makes interesting estimates as to the sources of supply for the cotton consumed by European mills. Of all the cotton supplied to Europe, the United States supplied 81 8/10% in 1900; 79% in 1901; and the estimate for the current year is placed at 78 2/10%.

These figures show a trifling decline in the percentage of American cotton, which is due to the increase in the supply from the East Indies and Egypt. The total quantity supplied to Europe by the United States in 1900, was 6,587,000 bales; in 1901, 6,579,000 bales; and for the current year, the estimate is 6,828,000 bales. The Chronicle reports the world's visible supply on January 31, 1902, at 4,554,815 bales; as compared with 4,248,000 bales on same date last year; 4,167,052 bales in 1900; and 5,697,559 bales in 1899.

—The Customs Appraisers at New York have decided that cotton cloth known as "chintz," to which has been applied a composition dressing of starch and dyes constituting about 20 per cent. of the weight of the fabric, is not filled or coated cotton cloth within the provisions of the present law, but is dutiable as countable cotton cloth under the so-called countable provisions of Schedule I.



Fluctuations of Wool Prices in England during past eighteen years.

WOOL AND WOOLENS ABROAD.

In a recent review of the woolen trade of England the Yorkshire Observer states that the South African war has worked both directly and indirectly great injury to the industry, and at the beginning of 1902, depression is widespread and the prospect dark. Following is an abstract of the review:

The most striking features of the year's business are the extraordinary collapse in the values of all crossbred and home-grown wools, and the tremendous falling-off in our export yarn trade. It seems but yesterday when it was held that New Zealand 40's crossbred tops were worth speculating in when they reached 25 cents per lb., but last month, December, they could be bought at 14 cents per lb., and perhaps even below that, while yarns were proportionately low. The chart at the head of this article shows the course of prices in England on three grades mentioned for the past eighteen years.

Though business has been difficult in every branch, both spinners and manufacturers have been kept going, and though machinery has not always been fully employed, it has been rather for want of hands than lack of work. It has been in the weaving trade as in the spinning—more work for less weight.

On the 1st of January, 1901, super 60s tops stood at 39 cents; during the year they have touched 40 cents, and today they are worth 37 cents.

The wool business is now too big to be cornered, and, with the exception of the fatuous "futures" markets on the Continent, it furnishes none of the means by which gamblers love to operate. Speculation in wool is subject to the sobering influence of hard cash, and is thus confined within certain limits.

We have retained for home consumption out of the total import of colonial wool no less than 973,000 bales, as compared with 619,000 bales in 1900. It may be noted in passing that the total quantity of colonial wool (including 307,000 bales imported direct) taken by the Continent and America is 1,079,000 bales, so that England's share is only 106,000 short of that taken by the rest of the world, which shows that we are not so much in the background as some pessimists wish to make out.

For six years we have been face to face with a shortage in the supply of

merino wool which has gradually been swelling until it has reached 600,000 bales, taking the high-water mark of 1895 as the basis of comparison. This represents in money some $50,000,000. Throughout the year the demand for mohair has run almost entirely to the finest sorts of Turkey and Cape kids, at one end of the scale, and on the lowest classes of Turkey and low winter Cape at the other. The almost entire absence of business in medium qualities, which are, of course, the bulk of both the Turkey and Cape clips, has been most marked all the year through; and this peculiarity of the demand has consequently made the business very difficult to do.

As a matter of fact, even in the Turkey hair the demand was from the first for something "a bit better than the best," and it was only late in the autumn, when the market had been cleared of such parcels, that ordinary good average could get much attention.

Thus Cape hair has come off badly, and has had a dreadfully slow, dragging market all the year through. Hence, the market quotations seem to show considerable irregularities, the value of anything exceptionally good frequently being twopence a pound above wool of the same class, but just a shade below it in quality.

Prices opened a year ago at 32 cents for the best class of Turkey mohair. Today this grade is quoted at 27 cents.

Cape firsts have had a disastrous year. Practically there has been no demand whatever for this description. Ordinary Port Elizabeth firsts of 32s quality opened in January with the almost nominal quotation of 30 cents. By the time the new clip was shorn it had dropped three half-pence, and ever since then ordinary firsts in the absense of business have steadily receded until they stand today at 25 cents. The course of prices in the Cape trade this year emphasizes still more strongly the need for more attention being devoted by the Cape growers to the cultivation of quality rather than quantity. Along side this striking demand for quality, however, we have had a run on the commoner kinds of winter hair, which are very much wanted for the low rovings used in the manufacture abroad of skirt edgings. Good winter hair, which was in the earlier part of the year worth 23 cents, has now come down to 19 cents. Mixed bales have had an indifferent sale throughout the year.

Speaking generally, the yarn trade has been during 1901 in anything but a prosperous condition, there has nevertheless been a considerable amount of business done, though at low prices. Spinners of Botany yarns, and especially Botany mixtures, have been well employed throughout the year, and consequently prices have been well maintained. In this branch the year 1901 has shown an improvement on its predecessor. The fluctuations in prices of other yarns during the whole of 1901 have probably in very few cases exceeded 10 per cent.; for 2-40s from 60s quality white have been a little below or slightly over 50 cents per lb., and mixtures we may reckon as averaging 12 cents per lb. more. There was a slight giving way during the summer months in white Botany, but the recent wool sales have had a hardening tendency, and today 2-40s Botany in oil, off usual 60s quality, stands at about 52 cents, whilst mixtures may be reckoned 12 to 14 cents per lb. above that price, according to the spinner.

A striking feature in the yarn trade of the year has been that, while Botany has been so firm, nearly all sorts of yarn made from tops of slightly lower quality have been exceedingly low. For instance, a good yarn made from 50s or 52s quality has sold at 32 cents in thick counts, being about 14 cents under the corresponding counts of Botany yarns.

Coming to Class 2, the lower sorts of serge yarns have by no means sold

so well this year as last. Last December, when 2-40s weft had come down to 32 cents, it was thought the limit had been reached, and no one dreamed that before another year had gone 26½ cents would be a market price for this yarn. But, even at 27 cents, the margin for the spinner between top and yarn is better than it has occasionally been in years past. These low crossbred tops have stood for months past at extremely low rates, so that it has been possible to make 2-32s under 25 cents per lb., and 2-40s at 27 cents, and still leave working expenses for the spinner.

The last great branch, including most yarns for dress goods, has been in a more satisfactory state than the low crossbred trade. Mohairs have kept pretty firm throughout the year —the cheaper 2-28s and 2-32s are rather lower than they were a year ago, but the better sorts and finer counts have kept up well—and the demand has been good.

The general verdict upon the cloths trade of 1901 is scarcely a favorable one. Of European countries, France, Germany and Belgium all show a considerable falling off in their purchases of our goods, due in the main, no doubt, to the poor condition of the industrial classes in all these countries but also attributed in part to the intense anti-British feeling which has been aroused by the war in South Africa.

Exactly what weight is to be attributed to this factor it is, of course, impossible to say, but that it counts for a good deal seems to be proved by the fact that the decline in our trade with Belgium is most marked, and that it is in Belgium where President Kruger and his entourage have found asylum, that the hostility to Great Britain is most pronounced. some other countries, notably China, Canada, and Turkey, have increased their accounts with us, while the United States shows a slight further restriction of the now comparatively trivial amount of its imports of our manufactures.

In the high-class dress trade we have had another year's run on plain goods, though at last the black spell seems to have been broken. The Zibeline, a cloth which was introduced by the French last year, has had a fair measure of success, and has even been imitated in quite low goods. The true Zibeline is made from pure cashmere yarn, and is a delightfully warm and soft fabric, and yet as "light as a feather," in spite of its rather coarse and heavy appearance, but it is a decidedly expensive article. Made in low qualities it has very little wear in it, and soon loses its freshness.

The new silk and wool mixtures are yet rather in the nature of an experiment, as the issue seems to depend upon our ability to dye and finish these goods satisfactorily rather than upon our ability to make them. The efforts which have been made already have so far succeeded as to bring some most encouraging orders, and certainly these goods when properly finished are amazingly attractive. They are light in weight, and therefore admirably suited to the present style of dress, and yet they drape with a richness which can only be rivaled by the most costly silks, while as regards price they come well within the reach of the vast middle class which can easily afford to buy goods at from 50 cents to $1.50 a yard.

The Voile, or as it is sometimes called the Aeolian—a cloth made with a silk warp and a hard twisted 3 to 4 ply Botany weft—is indeed a revelation, for it combines in the most striking manner the qualities of lightness, elegance, and strength. These are goods which the French have been producing successfully, but there is no reason why they should not be made quite as well here. Grenadines have had a good trade, and are likely to be wanted next year. There has been a steady trade in lustres, but in the best class of goods only. Some little revival has taken place in cotton

warp cashmeres, but Bradford manufacturers have apparently given up trying to make all-wool cashmeres. A very large trade has been done in moreens for skirts, a class of goods which has completely knocked out the old fancy striped skirting. Crepons, too, have almost been forgotten, and the trade has altogether gone off wool and mohair figures. A very big trade has been done in coverts and light overcoatings, mostly greys, for rainproofing by the Cravenette or other process. These cloths have also gone largely into use for ladies' jackets, and as a consequence have almost taken the place of Paramattas and similar cloths used by the proofers. In serges for men's wear a fair amount of business has been done with the Leeds clothiers."

Seasonable Fabrics.

MEN'S WEAR WOOLENS.

The woolen goods market for fall season of 1902 has developed considerably during the past few days with the opening of several lines of clay diagonals and serges as well as thibets, granites and venetians. The American Woolen Co.'s opening prices on clays and serges came somewhat as a surprise to the trade, the average prices being considerably lower than the prevailing prices of last season.

Where comparisons can be made, the new quotations seem to show a general decline of from 2½ to 12½ cents with an average decline of about 5 cents. The quotations on clays are as follows: 12 ounce, $1.00, same as last year; 14 ounce, $1.10, 2½ cents lower than last year; 16 ounce, $1.20, which is 5 cents lower; 18 ounce, $1.30, 7½ cents lower. The lines of serges differ considerably from last season's lines but on standard numbers where comparisons can readily be made, declines are shown of from 7½ to 12½ cents per yard.

In serges such declines as have been noted are mostly on the lower grades, some of the higher grades showing a slight advance over last season. The lines of granites, thibets and venetians also show an advance of from 2½ to 12½ cents per yard. While considerable business on these lines has been booked, much more conservatism has been shown than was the case at the opening of the overcoating lines a few weeks ago. A decided tendency is shown to await the opening of competitive lines before placing full fall orders, so that it would seem as though the low opening prices of the American Woolen Co., had actually retarded business.

It is predicted that hard finished worsteds will have a decided preference over the unfinished goods.

WOOL DRESS GOODS.

The prospects for the spring dress goods season are brighter this year than has been the case for several seasons, and everything seems to point toward an increase in business all along the line. The popular demand seems to be for fabrics of the two extremes of weight; heavy skirtings up to 20 ounce weights in dark oxfords and browns have been in excellent demand, and on the other hand, light sheer fabrics of every description have been strong favorites.

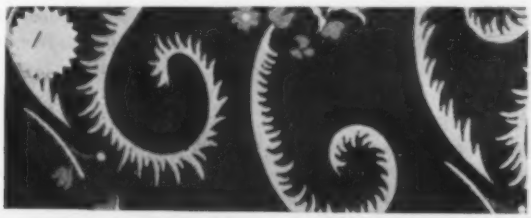
Everything in the way of veilings in plain effects and novelties, as well as batistes, grenadines, mohairs and Sicilians and goods of a similar character are being asked for on all hands and there is every indication that this demand will continue on into the spring season. Cream mohairs from 32½ to 65 cents are at a premium, but why it should be so is hard to explain. Retailers, realizing that the spring season on wool dress goods is very short, are taking advantage of the situation and are making all preparations to get their share of the business.

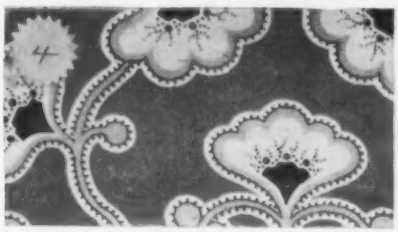
SILKS.

Very satisfactory conditions prevail

throughout the entire piece goods silk market and signs of activity are in evidence on all sides. Jobbers have done a very satisfactory business, have reordered in fair quantities and everything in the way of a desirable job is quickly picked up. In the line of staples, black as well as colored taffetas have been in good demand in fair quantities.

Moire velours and everything in the way of a moire grosgrain weave is quickly snapped up. The manufacturers who are equipped for making grosgrains are running their plants to their utmost capacity and the watering or moiring establishments are several weeks behind on their orders. Grenadines and gauze fabrics of every description have been good sellers and will undoubtedly continue strong throughout the season. Printed liberties and foulards are in strong favor and a large part of the business on popular priced goods will undoubtedly be done on goods of this character. Samples No. 1 and 2 are two of Cheney Brothers popular patterns in their 55-cent cloth.





In higher grade fancies, black and white weave patterns in small figures, hairline stripes and jasper effects are the leaders but Roman stripes and printed warp effects are

not looked upon with much favor this season. Sample 3, one of the handsomest of the season's novelties, is made by the William Strange Co., and sold by them at 92½ cents. This is a high grade white taffeta with grouping of 12 or 14 black, hairline stripes between double rows of a raised floral design in white and black.

Bleached Shanghai silks are extensively used and the market has been short of them. One of the pronounced successes of the season has been a fabric designated as "Tussah Shantung," placed on the market by C. C. Rettger with Boesneck, Broesell & Co. This is a soft pliable cloth made from wild silk and, because of its construction, lends itself perfectly to draping purposes. This cloth in a 27 inch width comes in the natural shade as well as in a full line of colors, and is marketed at such a price as to place it within the reach of all.

COTTON DRESS GOODS.

It is safe to say that this season's business on cotton dress goods and wash goods of every description far exceeds anything our manufacturers have ever before experienced. Retail stocks are beginning to move and jobbers are already receiving duplicate orders in fair sized quantities. So many high class novelties have been produced that it is a difficult matter to single out one more worthy of note than another, but for beauty of design and excellence of workmanship we make particular mention of the Totokett silk, a fine light weight mercerized printed fabric 30 inches wide, made by Wm. Simpson Sons & Co., and sold to the trade at 13½ cents net. The neat, sightly packages, resembling piece silks, render this article all the more attractive and salable. It is made in a wind range of ground colorings and in a vast variety of patterns, one of which is illustrated at Fig. 4.

Printed calicoes are in good demand and, although no advances have been noted, several lines have been put "at value" during the last few days instead of making outright quotations. Ginghams still continue to hold a strong position and every line of any prominence has long since been sold out of sight. The gingham supply is not anywhere near equal to the demand this season.

The white goods season is now at its height and the volume of orders pouring into the market is nothing short of astonishing. This will, beyond a doubt, be one of the greatest white goods seasons on record. There has been a notable revival of interest in piques, and everything in the way of a novelty or fancy weave has been quickly marketed.

No developments have arisen to disturb the quiet tone of the lining market and a fair amount of business is coming forward from day to day. The market on gray cloths remains firm but no advances have been noted. Kid finished cambrics are still quoted on the basis of 3½ cents for 64s, but no large orders are being placed, buyers simply supplying their immediate requirements. The usual steady demand from the clothing trade for twills, alberts, cotton Italians, etc., has been in evidence and prices remain unchanged.

Notes from the Chemnitz Market.

Business in knit goods with lace effects is very active. Manufacturers of these lines are already compelled to put off deliveries on new orders until the end of April. Unfortunately for the most of the lace knitters, they did not make any goods for stock; the few manufacturers who did pile up goods, have disposed of their stocks at advanced prices. Fancy goods of all kinds are in brisk demand, and the producers are very busy; buyers are compelled to wait long periods before they receive their goods. This state of affairs applies to the jacquard and embroidered goods. Embroiderers are kept busy to meet the demand halfway. A brisk business is being done

in gloves, particularly in summer articles. Silk and half silk gloves are neglected, lisle thread having been substituted. Good orders have been secured on Ringwoods, although there has been a large stock of winter goods left in the hands of the retailers.—Deutsche Wirker Zeitung.

Samples of Imported Woolens and Worsteds.

While American designers of woolens and worsteds have during recent years exhibited great originality in their work, it remains a fact that imported goods still furnish the basis for the patterns in most American mills.

A large business is done with manufacturers and commission houses by the dealer in foreign samples. He is a frequent and welcome visitor to every New York commission house. He lays his collection before the selling agent, who selects those that please him most, paying from 50 cents to $1.00 per sample.

These selections are then sent to the mill to guide the designer in getting up the line for the coming season.

This method is open to serious objections. It gives the designer but a small number of samples, and frequently they are selected with no regard to the fabric in which the pattern is to be duplicated or imitated.

To provide manufacturers and designers a better means of keeping in touch with the work of European designers, the Textile World has secured the agency for Le Moniteur des Echantillons de l'Industrie Drapiere, which has enjoyed a large circulation among foreign mills during the past twelve years.

This journal furnishes three hundred and eight (308) good-sized samples of woolen and worsted fabrics each half year. Each sample is accompanied by warping and weaving directions, giving the size of yarn, arrangement of colors, ends, width, picks and chain draft.

The patterns are selected from the latest and best European designs and fabrics. By means of a key furnished by us the weaving directions are readily understood by English readers. Two installments appear each month, making 12 issues for the six months. The subscription price for the six months is but $11, for which the 308 samples with weaving directions are furnished.

This journal not only furnishes the manufacturer and designer with the latest European designs, but also with the fabric specifications for each one, thus obviating the necessity for dissection of samples.

We have examined the various sample journals issued in Europe and believe the Le Moniteur des Echantillons to be the best. One superiority that it possesses over others of its class is that weaving directions are given for every sample furnished. This is not done by any other publication that has come to our attention. Another of its advantages is in the size of the samples which are larger than those supplied by other sample journals.

The light weight season began with the January issue, sample copies of which can be seen at the office of the Textile World, where subscriptions are received for the United States and Canada.

Census of Wool Manufacturers.

The census bureau has issued a preliminary report on the wool manufactures in the United States, showing a total of 1414 establishments, a decrease of 17 per cent. from 1890; total capital $310,179,749, increase 26 per cent.; value of products $296,990,484, increase 10 per cent. The average number of wage earners is 159,108, drawing $57,933,817 in wages.

The miscellaneous expenses were $17,329,932, and cost of material used $181,150,669. These figures are exclusive of hosiery, knit goods and fur hats. The capital and value of products of various portions of the industry follow:

Woolen goods—Capital $126,169,862, decrease 4 per cent.; products $120,038,792, decrease 10 per cent.

Worsted goods—Capital $130,384,510 increase 92 per cent.; products $118,705,710, increase 50 per cent.

Carpets and rugs, other than rag—Capital $44,419,299, increase 16 per cent.; products $48,192,351, increase nine-tenths of 1 per cent.

Felt goods—Capital $7,125,276, increase 68 per cent.; products $6,461,691, increase 39 per cent.

Wool hats—Capital $2,050,802, decrease 51 per cent.; products $3,591,940, decrease 33 per cent.

Old Halcyon Mill.

The recent failure of William Nuttal & Co., who operated the Halcyon Knitting Mills, Cohoes, N. Y., brings to mind the somewhat eventful history of this mill. It was built in the 50's and operated by Barber & Lackie, and early in the 60's, Alden, Frink & Weston purchased it. I had charge of the spinning. This firm failed in '66 for nearly $1,000,000. They were then operating four mills altogether, with a large axe factory. This was a case of too many axes to grind. Then the Ranken Co. purchased it. They were heavy creditors. I superintended the mill for them for two years before their failure, which was a heavy one. Mr. William Nuttal then purchased the mill, which contained 17 sets of carding and spinning with knitting machinery. I believe he paid for the mill, including all real estate, about $45,000. Since then there has been a good deal of money made at times out of this plant, and it is to be regretted that another failure has to be chronicled in the history of this well-known mill.

OLD SUPERINTENDENT.

An Important Indigo Decision.

The clothing department of the Prussian Ministry of War has recently come to a decision of importance to the German chemical industry. The samples hitherto sent out to the manufacturers of the blue cloth used in the army were dyed with natural indigo derived from the plant. It has been established that the German artificial indigo gives a purer and brighter shade of equal fastness. The military authorities have therefore decided in the future to send out samples dyed exclusively with artificial indigo. Cloth manufacturers are to be allowed to work according to the old pattern for next year's delivery, in order to give them an opportunity to use up any stock they may have of the natural product of the indigo plant. Under the decision the manufacturers of indigo blue army cloth in Germany may now use either indigo made synthetically or vegetable indigo sufficiently refined to give the bright shade shown by the standard sample.

A New Cloth Board.

The difficulties with the ordinary cloth board are well known to every manufacturer of cloth. If made of green or partially dried stock the moisture is liable to injure the finish and cause mould spots on the tail end of the piece. If not covered with paper, the sawdust, chips and dirt adhering to the board get on the cloth, causing much trouble in removing them when the pieces are unrolled, and, what is worse, exciting a prejudice against the goods just as the purchaser or his examiner is about to inspect them. Covering the boards with paper is a remedy for these troubles, but this takes time, costs money, and if not done properly, is worse than not doing it at all. In every lot of solid cloth boards there is apt to be a greater or less proportion of defective boards. Many of these are not strong enough to stand the strain in winding the cloth. The result is an immediate break up of the

board as soon as the winding is begun, or a crack which is not discovered until the piece is partially or completely wound on the board, in which latter case the cloth must be unwound, a new board substituted and another start made.

Too many mill men fail to recognize the value of properly doing up the goods for market after they are finished. Clothes make the man, it is said, and so the cloth board, the cloth ticket, the winding and general appearance of the roll of cloth goes far to predispose the trade for or against the goods before the fabric has been shown. In many of the best mills these facts are recognized and in one instance, that of a well known make of imported dress goods, a cloth board of such an attractive and distinctive charactor has been used so long for this line that the goods are recognized by nine out of ten buyers as soon as the board is seen.

Recognizing the defects of the ordinary board and the advantages to the mill of a board properly constructed, Messrs. Chaffee Bros. & Co., Oxford, Mass., have designed and patented a cloth board which combines strength, lightness and an attractive appearance.

It consists of a wooden frame covered with strong paper. The construction of the frame brings the strain in winding lengthways of the grain instead of crossways as in the common board, thus greatly reducing the liability of breakage. It is very light owing to the fact that much less material is used. It needs no covering before use as the paper serves that purpose. It is attractive in appearance and will prove a welcome substitute for many of the boards now used.

Further information may be obtained from Chaffee Bros. & Co., Oxford, Mass., who, besides cloth boards, manufacture box shooks of any size desired.

Tests for Silk Cotton and Wool Mixtures.

1. Boiled in caustic soda the pure silk and wool dissolves, leaving the Tussah silk and cotton unchanged.

Another sample is boiled in hydrochloric acid. The true silk and Tussah silk dissolve; the cotton and wool are not changed.

The residue (cotton and Tussah silk) after boiling in caustic soda is boiled in concentrated hydrochloric acid. The Tussah is dissolved, leaving the cotton. By subtracting the quantity of cotton thus obtained from the quantity of cotton and wool left after boiling in hydrochloric acid, the amount of wool in the fabric is determined. The quantity of true silk is obtained by subtracting the proportions of the other fibres from the total weight (Hoehnel).

2. A sample is boiled in concentrated hydrochloric acid at first for one-half minute to dissolve the true silk; then two minutes more to dissolve the exotic silks (Senegal, Tussah, etc.); cotton and wool are unchanged. This remainder is then boiled in a solution of caustic soda to dissolve the wool. The loss in weight by each operation and the weight of the residue (cotton) gives the proportion of the different materials (same).

Sample Card Machine.

The accompanying illustration, Fig. 1, shows a card upon which the sample has been mounted by the Cummings-Angelum sample card machine, which automatically gums and pastes cloth samples to cards. The idea for such a machine occurred several years ago to the inventor of Bradt's sample card machine, and, after long and tedious experiments, the new machine has been brought to its present state of efficiency.

The way in which samples of cloth

are presented to the eye of the customer is of great importance in securing orders for the goods. A neat, well arranged assortment of samples predisposes the buyer in favor of the line at once, whereas, if they are mounted in a slovenly and careless manner, the disagreeable impression produced creates a prejudice against the goods, and the buyer is apt to assume that they are manufactured in the same careless way; in most cases this assumption is well founded, since the best manufacturers have long recognized the value of samples and goods prepared in an attractive style for their customers.

The difficulty and expense of mounting samples properly by hand is well known. Constant oversight of the operator is necessary, and the results are often far from satisfactory. The Cummings-Angelum machine does this work accurately and neatly. The builders state that no finger or other marks can get on the cards in the op-

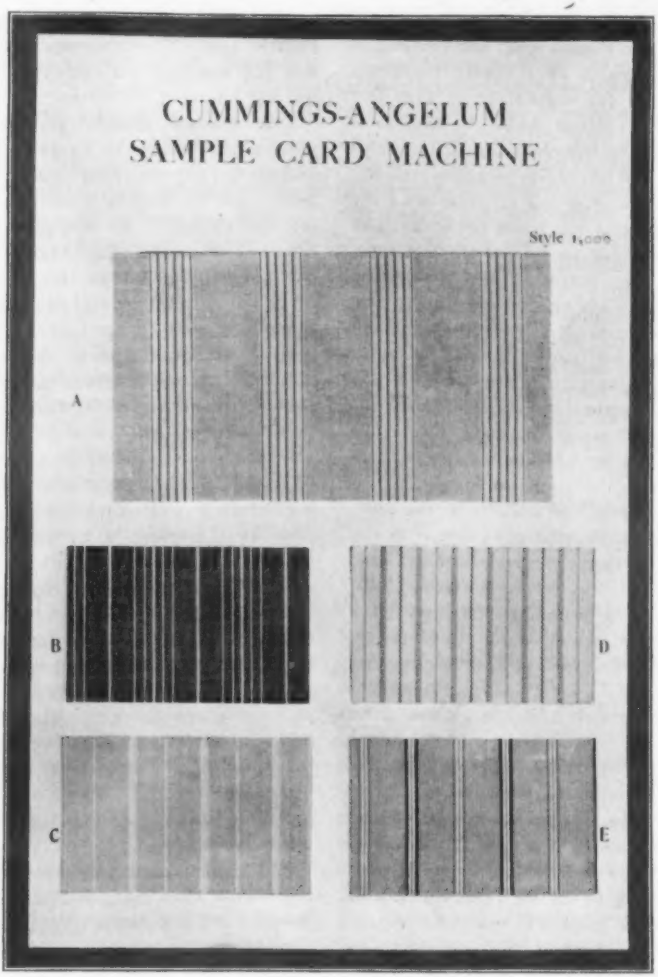


FIG. 1.

eration, that each sample must necessarily be laid evenly with the same spacing between the swatches, and, consequently, the cards require no inspection.

After setting the card machine, the pockets are loaded and the machine is ready to lay the card. By means of a gumming plate the sheet is gummed where it is desired to place the swatch, and, placing the card in position, the machine is closed and a turn of the wheel attaches the swatches to the sheet. Placing the completed card in the automatic press, the process is repeated until the number desired is obtained as indicated by the counter.

FIG. 2.

It is stated that from one to a hundred different swatches can be laid on a sheet as quickly as a girl can lay one or two by hand; the greater the number, the greater the saving. The machine can be readily adjusted to suit any size or shape of sample. A counter shows the number of cards mounted, and thus saves the work of counting to see when orders are completed.

Fig. 2 shows the machine with the press open. It is protected by patents and has been in successful operation for some time; it is, therefore, no longer an experiment; a purchaser is able to verify all the claims made for it by personal inspection and reference to users. As the machine was perfected, it was found that in other respects much of the old process was crude, and that but little time or thought had been expended in an effort to improve the methods or reduce the expense of hand work. The result of this was much time and money expended in perfecting methods and a gum that would stick, give the operator time and not buckle or spoil any of the various kinds of card or paper used.

Further information in regard to this machine can be obtained from the builders, the Cummings-Angelum Machine Co., 320 Broadway, Room 1020, New York, who will upon re-

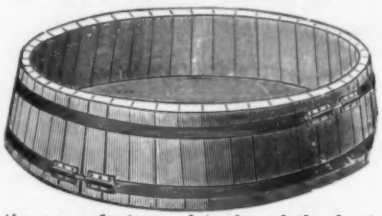
quest, send sample cards mounted by this process.

Tanks and Vats.

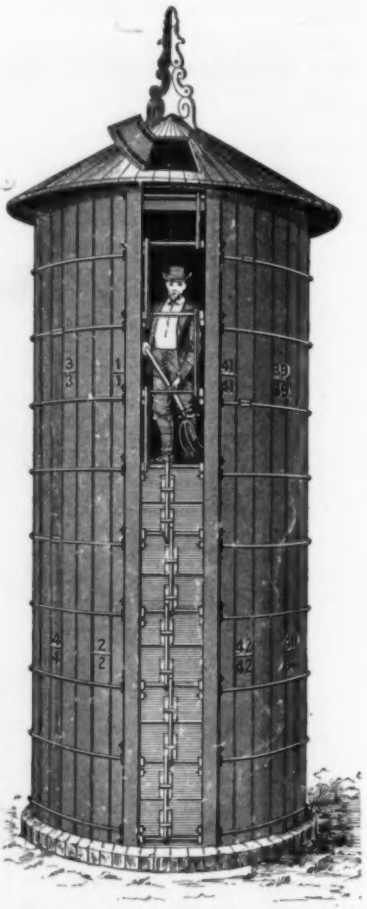
There are many important features connected with the building of wooden tanks and vats which make it essential that mill owners should deal with experienced and reliable parties in this line of work. To begin with, the materials should be carefully selected, free from sap, knots, shakes and other defects and should at the same time be thoroughly air dried. The staves should be sawed to the proper level to ensure tight joints. The groove at the ends of the staves for receiving the bottom planks is another important point of construction.

Then there are the hoops, which should possess the necessary strength to resist the pressure to be applied. The number and spaces of the hoops should be properly regulated; the hoop lags, of which there are many types, should be as strong as the hoop itself and capable of being readily adjusted. It is only by long experience in building tanks and vats that the necessary knowledge in regard to those details is acquired.

We show in the accompanying illustrations a tank and silo built by E. F. Schlichter, 321 Vine Street, Philadelphia, Pa. Mr. Schlichter has been engaged in building tanks and vats for many years, and has acquired an enviable reputation in this line. His works are well equipped with all the appliances necessary for



the manufacture of tanks of the best workmanship and at the lowest cost. The tanks and vats built by him range from the smallest size to tanks having a capacity of 50,000 gallons. They are made of carefully selected stock, well dried, and are fitted with adjustable lugs, if desired.



Probably in no industry are wooden tanks subjected to such severe strain and wear as when used for silos, and the fact that Mr. Schlichter has made a specialty of building wooden silos for a number of years is a guarantee that all his work in the wooden tank line will be of the highest character. He also acts as agent for windmills, ensilage cutters and blowers, and pumps. He has recently issued a descriptive catalogue and price-list of the various tanks and machines built by him, which he will be pleased to send to anyone upon application.

Power Baling Presses.

The quadruple screw power press, shown at Fig. 1, is manufactured by

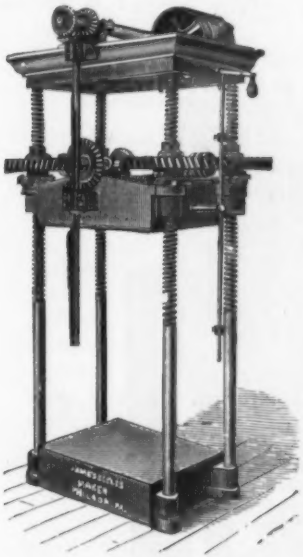


FIG. 1.

where great and uniform pressure is required. Among the new features embodied is that of controlling each of the four corners by a steel screw, 3½ inches in diameter, which is operated simultaneously by worm wheels. This arrangement brings the beds exactly parallel with each other at all times. The belt-shifters have one loose and two fast pulleys. The machine is driven by a 4½-inch belt, traveling 16,000 feet for each movement of the top bed. It is claimed that the pressure thus exerted exceeds that obtained by the best hydraulic press. The bed does not settle back until the belt is moved on the proper pulley. It is automatic, requires little labor and attention, and can be stopped at any desired point. Many of these presses have been in constant use for the past 19 years. Mr. Eccles can refer interested parties to many users, who can testify to the merits of the machines.

In addition to the press illustrated, he manufactures an automatic baling

FIG. 2.

James Eccles, Kensington, Philadelphia. This press is adapted for use press for warps, etc., see Fig. 2; a yarn bundling press, Fig. 3; power

presses for dyers' use, and a special press for baling hair and waste. He also builds an improved lift and force pump, and a patent warp coiler.

The merits of all these machines have been thoroughly established by long and continued use. Mr. Eccles is constantly on the lookout for improvements in his line, and we noted in last month's issue among the "New Machinery and Processes," an improvement which he is applying to his press, enabling the bale to be extracted without trouble.

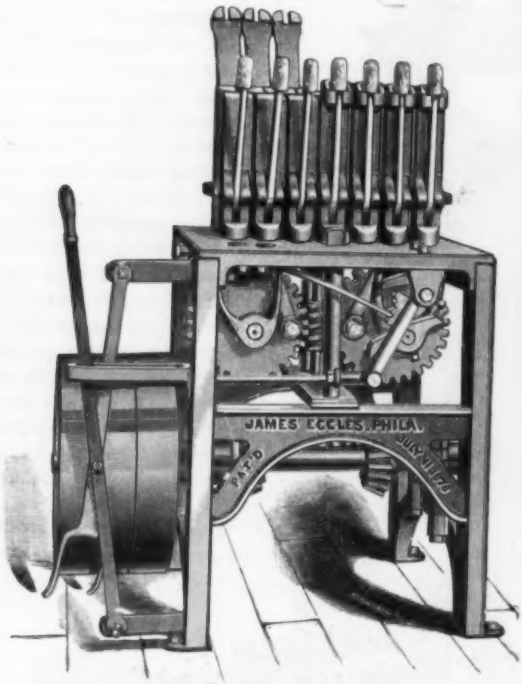


FIG. 3.

—A recent decision of the General Appraisers provides that Turkish towels and wash cloths made of cotton or flax, with an uncut loop or pile, are not dutiable as "pile fabrics" under the provisions of paragraph 315, act of July 24, 1897, but are dutiable at the rate of 45 per cent. ad valorem, according to the component material of chief value thereof, under the provisions of paragraph 322 or 347 of said act. The term "pile fabrics" as used in said paragraph is limited and restricted in meaning to articles or fabrics of kindred nature and kindred materials, with the associate articles grouped in the same paragraph, such as velvets, velveteens, etc., and is so known and used in trade and commerce. In another case the appraisers decide that the proviso in paragraph 391, silk schedule, tariff act of 1897, that "all manufactures, of which wool is a component material, shall be classified and assessed for duty as manufactures of wool," applies only to said paragraph, or at most to the schedule in which the paragraph is found. Accordingly, so-called traveling-rolls composed in part of wool, cotton or flax being the component material of chief value, are dutiable under paragraph 322 or 347 of said act, as manufactures of cotton or flax, not specially provided for. It is not necessary to ascertain which of two paragraphs in the tariff is applicable to imported merchandise,

where it appears conclusively that one or the other of them is appropriate, if the rate in each case is the same.

The Ramie Problem.

MAXIME CORNU.

President Ramie Congress, Paris.

That part of the ramie stalk suitable for fibre cannot be separated from the rest of the plant by retting or steeping in water, as in the case of flax and hemp. The substances foreign to the fibre are the outer bark and the gum. In China, where labor is cheap, this extraction of the fibre is accomplished by hand. In Europe, chemical means are used. The difficulty of extracting the fibre from the plant has thus far proved an insurmountable obstacle to the general utilization of ramie. Such chemical processes as were simple and economical have been found to injure the fibre. The Chinese method consists in rubbing or scraping the green stalks of ramie and China grass, the latter being very easy to degum.

If the stalks are first thoroughly dried, the rubbing or scraping converts the greater part of the gum and nearly all of the outer bark into a dust, which is easily removed. It then remains but to complete the degumming. When the bark is left on the stalk, however, and especially when, after stripping the bark in the green state, the stalk has become dry, the operation of degumming is very difficult and necessitates the use of either alkaline solutions so strong as to injure the fibre, or of weaker alkaline solutions in steam kiers, a complicated and expensive process. China grass is a variety distinct from ramie, and can be degummed easily without the use of a kier, but, unfortunately, the supply of China grass is very limited.

The fibre extracted from the dry stalks costs so much that users of ramie have been forced to rely on China grass for the raw material. The principal problem, therefore, has been to reclaim the fibre by a cheap mechanical process. Since then the efforts have been directed mainly towards extracting the fibre in the green state, and today we have a machine whose work is remarkable and which produces fibre of high quality. Several of them are in operation in various parts of the Far East. The progress made warrants the belief that a complete solution of the problem is near at hand.

But while the inventors have been occupied with treating the green plants, the dried stalks have been worked to a considerable extent on regular linen machinery. At the Ramie Congress in Paris last year, the sentiment was divided between the two methods, working the dry and the green stalks. The advocates of working the dry stalks claimed that this process should not be rejected, that it was valuable for the manufacture of certain articles, and possessed that advantage that the material could be utilized without first treating the fibre to remove the gum.

On the other hand, the advocates of degumming in the green state claimed that the product so obtained was much finer, stronger and more lustrous, and that this method preserved the good qualities of the fibre. These claims were generally admitted; in fact, they cannot be denied.

Nevertheless, even among the advocates of treatment in the green state, there was a division of sentiment. One party claimed that it was absolutely necessary to use a plant as near as possible to China grass, the only one which could be degummed easily in hot climates without complicated machinery; the other party criticised the small production of the machines working China grass, and preferred to offer to the trade a larger quantity of material, more difficult to purify and requiring the use of a steam kier, but of which a sup-

ply could be more easily obtained. It appears that the larger production spoken of has not materialized, although strong claims were made on this point.

The production of the plants in sufficient quantity to supply the machines has not been without certain difficulties. On the one hand, the plant was not raised for fear it could not be sold; on the other, it was not worked for fear a sufficient supply of the raw material could not be purchased. It may, possibly, be necessary to carry on the ramie industry as the beet and cane sugar is produced; that is, create groups of cultivators around central mills, where the crop will be purchased and treated. The present facilities for cultivation and transportation, now available in the cane sugar industry, might be utilized for ramie culture.

It is stated that the maximum price for the raw material as it comes from the growers is 6½ cents per lb. It may seem strange at first sight, that no difference in price is made between the different kinds of ramie. This is explained however, in this way; it is very difficult and expensive to dry the green stalks, but, when dry, they are easily peeled and degummed by mechanical means; on the other hand, the green stalk, difficult and costly to degum, gives a product of a greatly superior quality.

The time has arrived to abandon experiments on a small scale, and future operations should be on a large scale in regions favorable to the cultivation of the plant. Heretofore, the great difficulty has been to obtain the raw material in sufficient quantity, and it is for this reason that experimenters have groped in the dark. It is only in the regions where ramie grows in large quantities that exact information as to the value of various methods of manipulation can be ascertained, their value definitely determined and their defects corrected.

The managers of the Ramie Congress desired to have the machine in operation for a number of hours or even days during the session, but the lack of funds made this impossible. The exhibitors were compelled to bear a large part of the expense. An appropriation of $200,000 was available, and M. Faure, an exhibitor, furnished the raw material with which nearly all of the experiments were conducted. The ramie shipped from Algiers, was delayed in transit and rendered unfit for use, owing to fermentation. A small quantity of ramie raised from the seed by the Department of Agriculture of the Seine was furnished to the Congress, but, taken as a whole, the supply of material for the experiments was very deficient.

The present state of the question as shown by the discussions during the session may be summed up as follows:

The theoretical problems relating to the manipulation of the ramie fibre are now sufficiently well known and, henceforth, progress is to be sought in actual working operations.

Climate and hand labor, as well as machinery must be called into requisition.

A solution of the problem in but one direction is not probable. The ramie plant can supply material for many useful purposes. A machine or process should not be condemned in advance; what is not suited to one case may be well adapted to another. This leaves a large field for enterprise, but care should be taken to decide in advance upon the nature of the product to be sought for.

Ramie is a valuable textile material, which possesses a marvelous degree of strength and beauty.

Efforts should not be made to substitute ramie for some other material; its peculiar qualities should be utilized in a field of its own.

—I love an error that pleases better than a truth that hurts.—Mme. De Puysieux.

Facts and Figures Concerning Patents in Different Countries.

Compiled by D. P. Wolhaupter, Patents and Patent Law, Equitable Building, 1003 F St., N. W., Washington, D. C.

In determining whether it is advisable to secure protection on an invention in different countries it is important for the inventor, or patent owner, to have an understanding of the conditions under which (in each country where he may desire to be protected), a valid patent may be obtained and kept in force throughout the term for which it is granted. This general information is not usually nor easily accessible except through well posted attorneys, so it is the purpose of this article to present, for the information and guidance of those interested in patent protection, an outline of the more important requirements and conditions prevailing in the leading countries of the world.

In the selection of countries for patent protection, it is important to note that the proximity of Canada to the United States, and its intimate commercial relation, render a Canadian patent a quasi extension of the U. S. protection, and, as a general fact, the patent owner should bear in mind that the leading countries of the world, in commercial and industrial importance, are the United States, Great Britain, Germany and France. These countries likewise have adequate laws for protecting inventors in the exclusive right to their inventions.

The more important specific conditions governing the grant of patents in the different leading countries are given in the following abstract:

The cost indicated is usually for cases not requiring more than 1000 words translation; also does not include taxes except as may be indicated.

AUSTRIA.

Duration:—Fifteen years.

Requirements:—Annual tax (yearly increasing) to maintain validity. Invention must be worked or commercially produced in Austria within 3 years from the commencement of the patent term, and working must not be discontinued for more than 2 years.

Application Documents:—A full specification in duplicate signed by the applicant or his representative. Drawings in duplicate, one on bristol board and the other on tracing cloth; the size of the sheets being 33 or 34 centimeters in height by 21, 42 or 63 centimeters wide, margin 2 centimeters and space 3 centimeters at top.

Cost:—$65.

AUSTRALIA.

The situation with regard to federal patents in Australia remains unchanged, and it is still necessary to take out separate patents in each of the Australian colonies; being, respectively, as follows:

NEW SOUTH WALES.

Duration:—14 years. Provisional protection may be secured for 12 months or 10 months if complete patent is to be applied for.

Requirements:—There are no annual taxes, and no conditions as to compulsory working in the colony.

Application Documents:—Same as for Great Britain.

Cost:—$70, complete patent. Provisional protection, $40.

QUEENSLAND.

Duration:—14 years. Provisional protection 9 months, with 3 months extension for filing complete application.

Requirements:—There are no conditions as to compulsory working of invention, but prescribed taxes payable before 4th and 8th year.

Application Documents:—Same as for Great Britain.

Cost:—Complete patent, $65. Provisional protection, $40.

SOUTH AUSTRALIA.

Duration:—14 years. Provisional protection, 12 months.

Requirements:—Fixed taxes payable before end of 3d and 7th years.

Application Documents:—Same as for Great Britain.

Cost:—Complete patent, $70. Provisional protection, 12 months, $40.

VICTORIA.

Duration:—14 years. Provisional protection, 9 months.

Requirements:—Fixed tax payable before the end of 3d and 7th years. No working required.

Application Documents:—Same as for Great Britain.

Cost:—Complete patent, $65. Provisional protection, $35.

WESTERN AUSTRALIA.

Duration:—14 years. Provisional protection, 9 months.

Requirements:—Fixed tax payable before end of 4th and 7th years. No working required.

Application Documents:—Same as for Great Britain.

Cost:—Complete patent, $70. Provisional protection, $35.

BELGIUM.

Duration:—Ordinary patent, 20 years.

Requirements:—Annual tax (yearly increasing). Invention must be worked within a year of beginning of working elsewhere. Working must not be discontinued for more than one year.

Application Documents:—Full description, and drawings. Latter in duplicate on tracing cloth, either 8¼, 16½ or 23¼ by 13 inches high.

Cost:—$35.

BRAZIL.

Duration:—15 years.

Requirements:—Annual tax (yearly increase of $10). Invention must be worked in Brazil within three years from date of patent, and working must not be suspended for more than one year.

Application Documents:—Full specification in duplicate, and drawings in duplicate on thick white paper. The sheets must be 33 centimeters high by 21, 42 or 63 centimeters wide, with a rectangular frame traced in double lines but leaving a margin of two centimeters on the outside. Documents must be in the Portuguese language.

Cost:—$145.

CANADA.

Duration:—18 years from date of issue.

Requirements:—No annual tax. Invention must be worked in Canada within two years of the date of the patent. Articles may be imported for one year only, unless extension of importation period is granted.

Application Documents: — Complete specification in duplicate on paper, 13 by 8 inches. Drawings in duplicate on sheets of tracing cloth 8 by 13 inches. With each application an extra full set of drawings must be supplied on double bristol board 8 by 13 inches.

Cost:—Usually $35, covering a term of 6 years. Term extensible to the 18-year term by payment of Government tax of $40 before the expiration of the 6th year.

DENMARK.

Duration:—Ordinary patent, 15 years.

Requirements:—Annual tax, increasing each 3 years succeeding. Invention must be worked in Denmark within 3 years from date of patent.

Application Documents:—Complete description in duplicate and drawings in duplicate. One copy of drawings must be on white cardboard 33 centimeters high and 21, 42 or 63 centimeters in width. The second copy must be a tracing on muslin.

Cost:—$65.

FRANCE AND COLONIES.

Duration:—Complete patent, 15 years.

Requirements:—Fixed annual tax. Invention must be worked in France within two years of the grant of the patent. This working must not be discontinued for more than two years.

Application Documents:—Formal petition accompanied by a description limited to a single subject, and drawings. Under a new law which just went into effect on Jan. 1, 1902, original drawings must be on bristol board and duplicate may be an tracing cloth. The sheet must be 13 inches high, 6½ or 8¼ inches wide, with a margin of 1/10 inch from the edge. Arabic numerals should be used to designate parts of the drawings.

Cost:—$60.

GREAT BRITAIN.

(Embracing England, Ireland, Scotland, Wales and the Channel Isles.)

Kinds of Patents and Duration:—Only one kind of patent is actually issued. This has a duration of 14 years from the date of filing the application. Provisional protection, preliminary to filing complete application, may be had for a period of 9 months.

Requirements:—Annual tax (yearly increasing) to maintain validity. No working of invention required.

Application Documents:—In addition to proper petition in prescribed form, a complete specification of the invention and drawings. The drawings must be on sheets of pure white drawing paper, 13 by 18 or 16 inches, and a fac-simile of the original (but without color or wash) must accompany the originals.

Cost:—Regular patent, and taxes paid for 4 years, $50. Provisional protection for 9 months may be secured at a cost of $20.

GERMANY.

Duration:—15 years, commencing with the day following date of filing application.

Requirements:—Annual (yearly increasing) tax. Invention must be worked within three years from the date of the patent. May be revoked on ground of public good.

Application Documents:—Description of invention in duplicate on paper 33 by 21 centimeters. Drawings in duplicate, one on white cardboard and the other on tracing linen. Principal drawing sheet must be 33 centimeters by 21 centimeters wide. The additional drawing must be the same height, but the width is unlimited.

Cost:—$65.

HUNGARY.

Duration:—15 years.

Requirements:—Annual tax (yearly increasing to maintain validity). Invention must be worked or commercially produced within three years from grant of patent.

Application Documents:—A full specification in duplicate signed by the applicant or his representative. Requirements for drawings are the same as for Austria, excepting that the sheets must not exceed 33 centimeters in height and the second copy of drawings must be on transparent material.

Cost:—Same as for Austria.

ITALY.

Duration:—Fifteen years.

Requirements:—Annual tax (increasing at stated periods). Working required within 2 years.

Application Documents:—Three copies of description and the drawings. One copy of drawings on white cardboard and two on tracing linen, 6 by 8 inches, 8 by 12 inches, or 12 by 16 inches, with one inch margin.

Cost:—$60.

NORWAY.

Duration:—Fifteen years.

Requirements:—Annual (yearly increasing) tax. Working not compulsory, but failure to work within 3 years renders patent voidable.

Application Documents: — Description and drawings in duplicate. The requirements for drawings are the same as for Austria.

Cost:—$65.

PORTUGAL.

Duration:—Fifteen years or less. Optional.

Requirements:—At the time the application is filed there must be deposited the sum of 3000 reis for each of the years asked for. Invention must be worked

within two years from the date of patent.

Application Documents:—Description in duplicate on paper 33 by 22 centimeters. Drawings in duplicate on paper 33 centimeters in height and of any width, with margin of 2 centimeters.

Cost:—Taxes paid for one year, $75. For full 15-year term, $125.

RUSSIA.

Duration:—Fifteen years.

Requirements:—Annual (yearly increasing) tax. Must be worked within 5 years from date of patent.

Application Documents: — Description and drawings in duplicate. One of the drawings must be on white drawing paper and the other on tracing cloth. Size, 13 inches long by 8 inches wide, with a margin of one inch.

Cost:—$135.

SPAIN.

Duration:—Twenty years.

Requirements:—Annual tax (yearly increasing). Must be worked within two years from its date.

Application Documents: — Specification in duplicate, drawings in duplicate on tracing cloth any size.

Cost:—$60.

SWEDEN.

Duration:—Fifteen years.

Requirements:—Annual (yearly increasing) tax. Invention must be worked within 3 years from the date of the patent.

Application Documents:— Description and drawings in duplicate. Requirements of drawings same as for Norway.

Cost:—$70.

SWITZERLAND.

Duration:—Fifteen years.

Requirements:—Annual tax (yearly increasing). Must be worked within 3 years from date of application.

Application Documents:— Description and drawings in duplicate. One copy of drawings on bristol board and the other on tracing cloth. Size, same as for Belgium.

Cost:—$75.

UNITED STATES.

Kinds of Patents:—Ordinary mechanical patent; duration 17 years. Design patent; granted for any of three terms, viz.: 3½, 7 and 14 years.

Who May Obtain Patent:—A distinctive feature of the U. S. statutes is that valid patents can only be granted to the first and original inventor, and must be made in the name of the inventor, if living.

Conditions of Grant:—Unlike most other countries, the U. S. grant extends exclusive privileges to the inventor without restrictions of any nature. No annual or other taxes are required, and the invention is not required to be worked.

Application Documents:—A very full specification and claims drawn strictly in accord with the requirements of the statutes and the Patent Office practice. A drawing in india ink on bristol board 10 by 15 inches. Models not required unless called for.

Cost:—For cases of a simple nature, usually requiring one sheet of official drawings, the whole expense of obtaining a U. S. mechanical patent, including the Government and agency fees, is ordinarily $65. The usual cost of a design patent is: 3½-year term, $30; 7-year term, $35; 14-year term, $50.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices, and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market.

Interested parties are referred to the manufacturers for further information. These items are published without charge and regardless of advertising consideration, the idea being to present to our readers a systematic monthly record of new machinery, etc. of interest to textile mill men.

We invite machine builders and others to send us such information for this department.

Wood Split Pulley. A. W. Hoag & Co., 238 Walnut Street, Reading, Pa., are putting on the market an improved wood split pulley, fastened to the shaft by clamp bolts, which, it is claimed are easily adjusted, and not readily displaced when once in position.

Drawing-In Frame. The Draper Co., Hopedale, Mass., are introducing a warp drawing-in frame designed by W. L. Keene of the Lockwood Company of Waterville, Me., to hold the warp stop motion and harnesses in proper position. The device cannot be described in the limited space allowed for this notice, and should be seen in operation to be understood and appreciated. It is stated that the results so far have been very satisfactory in reducing the cost of drawing-in, and several mills have already adopted it.

Steam Meter. G. C. St. John, 143 Liberty Street, New York, is putting on the market a steam meter, a device for measuring steam. This is understood to be the only appliance of this nature successfully developed. The invention is due to the necessities of the New York Steam Co., which sells steam by measure, and it is used by them in the sale of steam from their street mains. Its useful-

ness in large steam plants will be readily appreciated.

Cloth Boards. The Chaffee Brothers Company, Oxford, Mass., are introducing an improved cloth board made of a wooden frame covered with paper. It needs no covers, and is strong and light. A description will be found in another part of this issue.

Clinch Bar for Stop Motion Twisters. The Rushton & Carroll Company, Olneyville, R. I., are introducing an attachment for stop motion on twisters by which the thread is firmly held when the stop motion is brought into action, thus preventing the ends from catching on the adjacent threads and causing bad work.

Tube Cleaner. A. W. Chesterton & Co., 64 India Street, Boston, Mass., is building a tube cleaning machine. The steam, leaving the head through curved outlets which extend to the mouth, passes spirally through the tube.

Exhaust Heads. The Hoppes Mfg. Co., Springfield, Ohio, are introducing a cast iron exhaust head, which withstands the action of the weather, smoke, soot and furnace fumes. The head is cast in one piece, provided with a threaded flange for attaching to the exhaust pipe. The water and oil are deflected over the edge of a nipple at the bottom, and are intercepted by a gutter, which is partly filled with water. A second gutter, also, partly filled with water, completely intercepts the water or oil and returns them to the bottom.

Indicator for Steam Engines. The Star Brass Mfg. Co., 108 E. Dedham Street, Boston, Mass., are building a new form of steam engine indicator, in which the ratchet and pawl is done away with. A friction clutch is used, consisting of a ball which is thrown in contact with a groove.

Hydro-Carbon System. The Steam Boiler Equipment Co., 20 West Houston Street, New York, N. Y., are the proprietors of a new system for increasing boiler capacity and efficiency. It consists in introducing hydrogen gas and oxygen, which holds in check the carbon gases generated from the fuel and gives a thorough intermixture, which produces a quick and thorough combustion. It is claimed that this prevents the formation of smoke, soot, or noxious gases by using all the heat-producing portion of the coal or fuel. Numbers of boilers in our large cities have been equipped with this system, which is said to be giving good satisfaction.

Self-Oiling Loose Wood Pulley. The Marble-Swift Mfg. Co., 1464 Monadnock Block, Chicago, Ill., are putting on the market a built-up wood pulley provided with a self oiling arrangement. Each segment, with the exception of the ends, is bored with small holes parallel to the main hole through which the shaft passes. These holes are connected with each other, and at one end of the pulley a hole leads into one of these chambers. The oil finds its way to the shaft by capillary attraction, and is prevented from passing outward by an oil-proof coating on one side of the holes. It is said that one charge of oil will last six months.

Water Tube Boilers. The New York Steam Boiler Co., 11 Broadway, New York City, are about to put on the market an improved water tube boiler, invented by James Anderson, engineer of the Brooklyn Rapid Transit Co. The headers are made sufficiently wide to take two or three connecting nipples into the drum; a partition is placed in the rear or descending header to extend downwards to the top of the second row of pipes. This partition is perforated opposite each tube, and the holes are capped to make the water descend to the lower row of tubes.

Raw Stock Dyeing Machine. Fischer & Co., Chemnitz, Germany, have recently brought out an im-

proved dye tub for raw stock. It is built of wood and has a false bottom, under which the steam pipes are placed. The stock rests on the false bottom and is held in place by a perforated top resting on the material to be colored. An upright pipe is placed in the centre of the tub under the false bottom where the liquor is forced through. This pipe is provided with a hood at the top, which spreads the liquor. The liquor then passes through the perforated diaphragm, through the raw stock back to the space under the false bottom, where it is again forced through the centre pipe as before. It is claimed that the material is left in a very open and fluffy condition, that uniform colors are obtained, and that the cost of labor is much reduced.

Feed Water Filter. The Boothman Patent Filter Syndicate, Fyfe Chambers, 105 W. George Street, Glasgow, Scotland, have recently placed on the market a feed water filter, which possesses several new features. The principal one is the use of gun metal casing to enclose the filtering material. When the set screws are released, the casing can be withdrawn and the material easily renewed. It is provided with a combined automatic by-pass and outlet valve. It is said to be 30 per cent. lighter than the ordinary filter, and a large increase of filtering area is obtained by the use of a new form of woven wire cartridge.

Calico Stretching Apparatus. Messrs. Mycock & Co., 81 Peter Street, Manchester, England, have placed on the market a machine for stretching calico in width. It consists of a series of bent or arched shafts, on which are fixed a number of discs that revolve as the cloth is drawn over them. The arched form of the shafts gives the discs a slant outward. The different shafts are adjusted so as to draw the pieces vertically on the discs. The face of the discs are grooved and their edges notched so that they engage with each other. It is claimed that the stretching on this machine takes place uniformly across the whole piece, with the result that the weft is not disturbed, retaining its original position at right angles to the warp.

Dyeing Machine. G. de Keukelaere, 46 Vicar Lane, Bradford, England, is placing on the market a machine for dyeing textile materials, in hanks, cops, tops or as loose stock. The liquor is forced through the stock by a rotary pump. The novelty of the device consists of round outer and inner tanks. The latter is divided into compartments. Among its advantages are said to be the reduction of the volume of liquor to a minimum; saving of steam, dyestuff, time and labor; uniformity of shade; no injury to the fibres.

Improved Slasher. Tattersall & Holdsworth, Enschede, Holland, are putting on the market an improved slasher, which, it is claimed, is very economical in the use of steam and turns off a large production.

Improved Hopper Breaker. Taylor, Lang & Co., Ltd., Castle Ironworks, Stalybridge, England, are building am improved bale breaker constructed on the hopper principle. No radical change has been made in the ordinary construction. A lattice is placed on the floor to facilitate the feeding. The evener roll has four rows of spikes; a revolving cage has been substituted for the usual grid, and a fluted roll assists the grid in delivering the cotton. A secondary stripper and the evener roll remove any surplus cotton, throwing it back on the lattice. The fans can be arranged to draw the dust from above instead of below. No outside gears are employed, ropes having been substituted.

COTTON DEPARTMENT.

Gauze Effects in Cotton Fabrics.

G. WASHINGTON.

II

(Continued from October.)

Fig. 13 contains the same weave effects as Fig. 9, and can be woven from the same plan by a rearrangement of the draft to fit the warping.

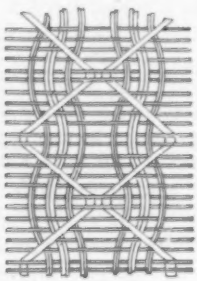


FIG. 13.

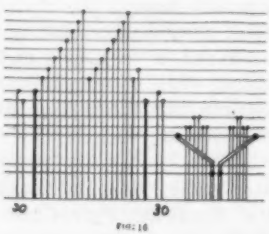


FIG. 16.

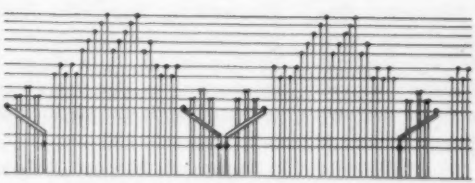


FIG. 15.

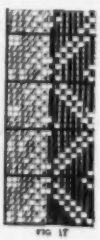


FIG. 17.

WARP.

10 ends 70s cotton in 20 reeds.
Twice. { 2 ends 70s cotton / 1 end 3-24s cotton } equal to 4 reeds.
6 ends 70s cotton in 3 reeds.
10 threes of 40s cotton in 5 reeds.
6 ends 70s cotton in 3 reeds.
Twice. { 2 ends 70s cotton / 1 end 3-24s cotton } equal to 4 reeds.

Weft and reed as before.

This pattern is more regular in appearance than the last, but some variety is imparted by drafting the figured stripes alternately to the right and left.

The fabric illustrated in Fig. 14 also contains three weave effects; but the figure in the stripe is not so distinct and effective as that in Fig. 9, where the bold plain effect balances and gives a clear outline to the diamond figure, causing it to stand out prominently. In this stripe the quantity of plain is very small, and each pick working separately, they are overpowered by the warp, and scarcely visible on the surface. Another reason why the pattern is indistinct, is that the long warp floats caused by the turning of the twill stand up more prominently than the remainder of the twill, and give it an irregular appearance.

This stripe is too crowded to be effective, and contains six times as much warp as the plain ground. The thick thread at each side effectually separates the stripe from the plain.

WARP.

10 ends 60s cotton in 15 reeds.
1 end 2-12s cotton in 1 reed.
18 pairs 30s cotton in 6 reeds.
1 end 2-12s cotton in 1 reed.
30 ends 60s cotton in 15 reeds.
1 end 4 12s cotton / 3 pairs 50s cotton } equal to 3 reeds.
3 pairs 50s cotton / 1 end 4 12s cotton } equal to 3 reeds.
36 reeds per inch.

WEFT.

50s cotton.
72 picks per inch.

The interlacing of the gauze is shown in Fig. 15. As the whip thread is very thick and bulky it is stitched down by two picks. The diamond effect is produced by crossing the whip threads in opposite directions, so that the crossed shed draws them together in the centre, while the open shed pulls them down at the outside of the stationary threads.

Each whip thread crosses over three pairs of stationary ones, which are over the picks that stitch down the whip threads, and weave plain with the remaining picks. The draft and pegging plan are given in Figs. 16 and 17.

The fabric shown in Fig. 18 contains the same gauze weave as last, both single threads and in pairs, contrasted with a stripe of 5 shaft twill. Figs. 19 and 20 are draft and pegging plan.

WARP.

1 end 4-12s cotton } equal to 3 reeds.
3 pairs 50s cotton }
4 ends 50s cotton in 2 reeds.
1 end 3-20s cotton in 1 reed.
12 ends 30s cotton in 4 reeds.
1 end 3-20s cotton in 1 reed.
4 ends 50s cotton in 2 reeds.

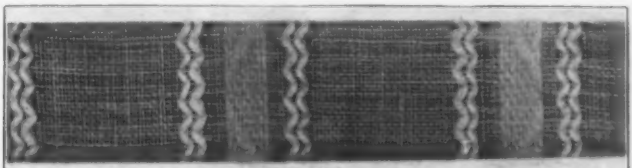


FIG 13

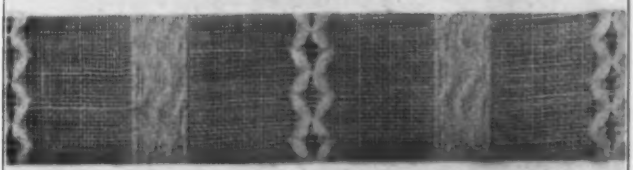


FIG. 14

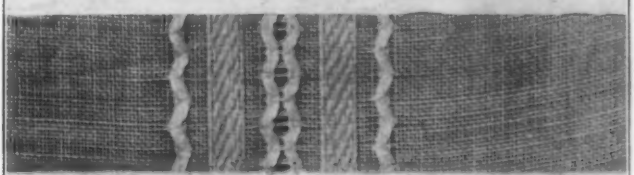


FIG. 18

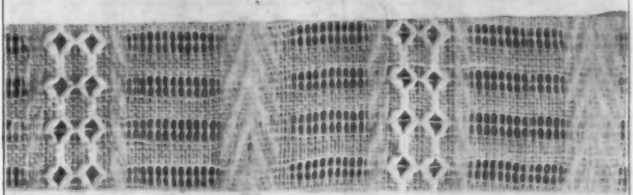


FIG. 21

1 end 4-12s cotton } equal to 3 reeds.
3 pairs 50s cotton }
3 pairs 50s cotton } equal to 3 reeds.
1 end 4-12s cotton }
4 ends 50s cotton in 2 reeds.
1 end 3-20s cotton in 1 reed.
12 ends 30s cotton in 4 reeds.
1 end 3-20s cotton in 1 reed.
4 ends 50s cotton in 2 reeds.
8 pairs 50s cotton } equal to 3 reeds.
1 end 4-12s cotton }
90 ends 50s cotton in 45 reeds.
32 reeds per inch.

WEFT.

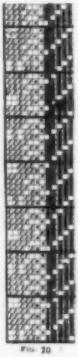
50s cotton.
60 picks per inch.

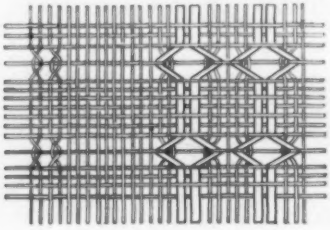
In the next example, Fig. 21, the plain ground is also woven with doup shafts so that gauze crossings can be inserted at intervals, thus producing short, open cross lines, which contrast both in direction and texture with the twilled stripes.

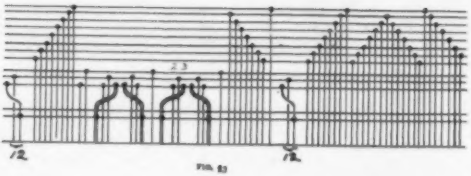
The fabric is all cream colored, excepting the thick whip threads in the large stripe, which are white and show very distinctly, thus making a greater contrast with the diagonal lines of the alternate stripes than if the yarns were all the same color.

In this fabric one doup shaft is used to produce two different effects. In the ground stripe the crossing threads are woven from the same beam as the stationary ones, so that while the slackness alters the tension of the threads there is no more yarn actually woven, and the stationary and doup threads receive an equal amount of displacement.

Each of the thick white threads cross over two stationary ones; the warp is on a separate beam, which allows it to come off quicker; therefore, the thick threads are drawn further out of a straight line than the stationary ones.







WARP.

24 ends 50s cream in 12 reeds.
8 ends 50s cream in 2 reeds.
2 ends 50s cream in 1 reed.
2 ends 50s cream } equal to 2 reeds.
1 end 2-20s white }
1 end 2-20s white } equal to 2 reeds.
2 ends 50s cream }
1 end 50s cream in 1 reed.
2 end 50s cream } equal to 2 reeds.
1 end 2-20s white }
1 end 2-20s white } equal to 2 reeds.
2 ends 50s cream }
1 end 50s cream in 1 reed.
8 ends 50s cream in 2 reeds.
24 ends 50s cream in 12 reeds.
28 ends 50s cream in 7 reeds.
32 reeds per inch.

WEFT.

70s cream cotton.
46 picks per inch.

Fig. 22 shows the interlacing of the different weaves; Fig. 23, the healding draft; Fig. 24, the pegging plan.

The third shaft works up and down for alternate picks and therefore can be utilized as one of the shafts required to form the plain, and is also used for one of the stationary threads; the fifth shaft completing the plain weave.

The whip threads are pulled down by the third shaft for every other pick, but to make the crossed shed on every eighth pick while the third shaft is up, the standard and slips draw the whip thread down, so that we have

here an instance of some threads being up and others down, although they are all drawn upon the same shaft.

Roll Covering and Spinning.

It is well known that corrugations are formed on the surface of leather covered spinning rolls by the pressure of the fluted rolls. This defect is sometimes aggravated by reason of the leather not having been drawn tight enough or by the foundation cloth being too soft. The latter cause is often due to a too long continued use of the cloth. Soft leather is still another cause of these corrugations. As the different parts of a hide vary greatly in hardness and elasticity, the roll coverer should cut the pieces somewhat shorter from the end of the skin, that they may be drawn tighter on the roll and a harder surface obtained. If this precaution is omitted, the ribs will quickly appear after the rolls have been in use. Too much weight on the top rolls is another cause.

If this defect exists on but a small number of the rolls of a mule, it will be found that the ends from these corrugated leather cylinders will be slacker than the others during the outward movement of the carriage. Some of them may be so slack as to sink far below the average level of the yarn, and cause snarls or kinks at the points of the spindles, as shown at Fig. 1. These kinks are often ascribed to defects in the slubbing, but this can be disproved by changing the spools, when it will be found that the yarn continues slack at the same rolls as before.

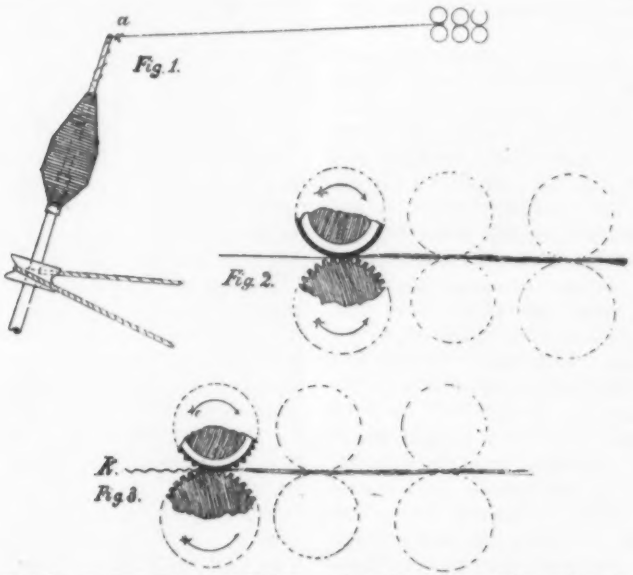


Fig. 2 represents a set of rolls with a smooth surface on the front top roll. In the set shown at Fig. 3, the top roll has become indented. The length of the yarn delivered at each revolution of the upper roll shown at Fig. 2 will be equal to the circumference of that roll. The length delivered at each revolution of the upper roll shown at Fig. 3, on the other hand, will be in excess of the diameter of this roll owing to yarn being pressed into the depressions in the roll, as shown at K, Fig. 3.

While the front rolls in this way deliver an unequal length of yarn at each draw, the back rolls supply the same length of roving to them. The consequence is that the indented rolls draw the yarn finer. This variation amounts in some cases to 2 numbers by the English system. The writer has observed this variation on ring frames, where, owing to the constant pull of the traveler, no kinks can form, and found the yarn from the smooth rolls to be No. 26, while the yarn from the indented cylinders was No. 28-2/10.

It is expensive to keep constantly replacing the indented rolls with others newly covered. Machines have been devised for smoothing the surface by means of hot plates and some of them have afforded a certain measure of success. The corrugations quickly recur, however. A remedy which I have successfully applied consists in separating the smooth from the rough rolls and using each kind by itself where an independent adjustment is possible, as, for instance, on either side of the head motion of a mule.

On the other hand I have found that the presence of these indentations is an advantage in spinning colored cotton. I ascribe this to the fact that the corrugated rolls grip the strand more firmly and thus can draw more evenly the colored stock, which, owing to the presence of chemical and dyestuffs, it is more difficult to separate and draw finer. Comparative tests made by the writer as to the strength of such yarn gave results decidedly in favor of the rough leather rolls.

The complaint is often made that newly covered rolls do not work as well as those that have been in use for some time. This is due to the fact that the draft of the carriage has been adjusted to the delivery of the old rolls. The shorter lengths delivered by the new rolls cause the yarn to become tightly stretched and to break. The remedy most frequently applied is an increase of the weight on the top rolls. This results in a speedy indentation of the rolls and should, therefore, be avoided. It will be found much better to keep the new and old rolls separate.—Leipziger Monatschrift.

The Pearson Conditioning Machine.

The Pearson method of conditioning yarn, which has been in use for some time in England and on the continent, is now being introduced in the mills of this country by the Draper Co., Hopedale, Mass.

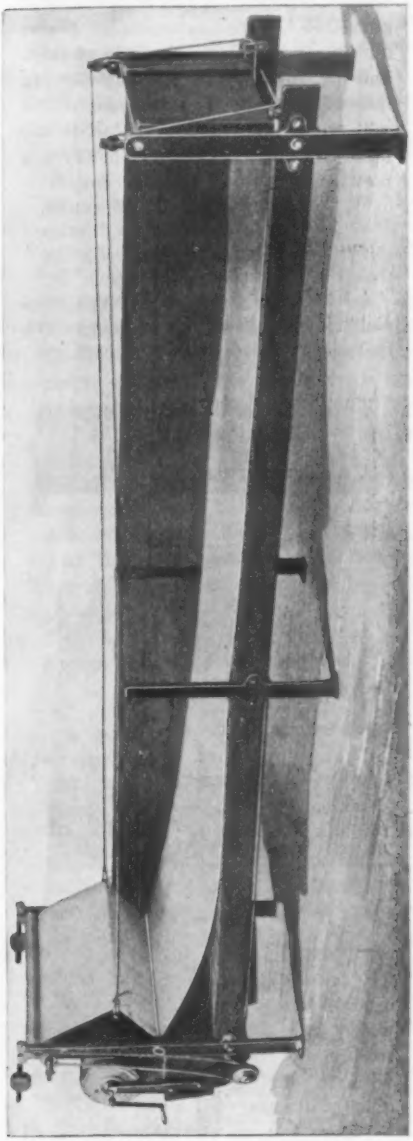
The advantages of having a certain amount of water in cotton and worsted yarn are well known. The yarn breaks less in weaving; less tension is required on the filling to prevent kinking; less cop and fly waste is made; and the cloth has a smoother appearance.

Former devices for this work have involved the use of the water can, the steam jet and the damp cellar. Certain machines have also been constructed involving the use of humidifying apparatus. The results have not been uniform in character, or have involved a considerable length of time.

The Pearson machine, shown in the illustration, consists of a long box with a roll at the end, on which is wound a piece of cloth. This cloth passes from the roll through water in the tank below, then through squeeze rolls to remove surplus of water, and then is carried lengthways of the box.

The bobbins or cops are deposited on the sheet to the depth of a few inches, a surplus layer of the wet cloth is then folded over them and the process is repeated by further layers, the sides of the machine being built up by removable boards until the full capacity is attained. By this process, the yarn is subject to actual contact with a positive moistener and the capillary attraction of the fibre insures a uniform distribution within a proper length of time.

There are thousands of these machines in use and they are giving excellent results. It is claimed that by this system wooden bobbins on which



the yarn is wound are not affected by the moisture as is often the case when yarn is steamed or sprayed.

It is stated that yarn as it comes from the frames will gain 4 per cent. in twelve to twenty-four hours, a result which requires weeks in mills where the yarn is aged. It is also claimed that there is no danger of stains or mildew, and that tests of the strength have shown invariable a gain in favor of the conditioned yarn.

The dimensions of the machine are 19 feet long, 4½ feet wide. Hand power only is required, and the production per machine is from 1000 to 1,400 lbs. per day.

Speed of Cotton Spindles.

Editor Textile World:

Dear Sir,—It is always interesting to me to read articles on cotton manufacturing, particularly those that have reference to branches that I am familiar with, but it seems to me that there is too much of a tendency to generalize and not enough explanation of details in many of these articles.

For instance, in the January issue there is an article "Speed of Mule and Ring Spindles," by "Mohawk."

This article would lead the uninitiated to think that the only limit to the speed of a spindle is what may be termed the mechanical limit; that is, the limit of speed at which the spindle will run without heating, excessive wear or vibration. If this was all, I have no doubt that mechanical skill and ingenuity would soon produce a spindle that would be so near perfect that there would be scarcely any limit to its speed, and the rest of the machine could and would be built to correspond with the speed of the spindle.

Again, the above named article speaks of ring frames that have been running for years with a spindle speed of 12,000 turns per minute. Nothing is said as to the number of yarn being spun, and, of course, a practical spinner would know right away that it was not very coarse yarn and that the other conditions were favorable. Now we all know that many agents and superintendents

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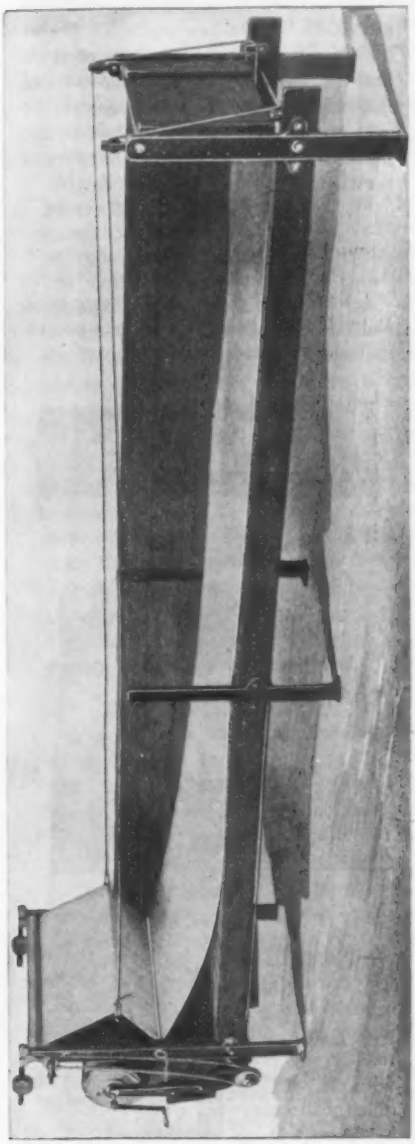

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are men who are not practical in the spinning or other departments of a mill, no matter how much executive ability they may possess or how successful they may be in the management of the mill as a whole. No doubt some of these, when they read such an article are very apt to ask their spinners to explain why some mills are running their spindles 12,000 turns per minute while they are running only 7, 8 or 9000, as the case may be. It is then up to the spinner to explain, and the explanation may be accepted as satisfactory, or the spinner may be told that he is either behind the times or prejudiced against high speed, and that he must get onto his job on out of it.

Sometimes the roving is not what it should be and the work does not run well; in order to keep the frames running the speed is then reduced. Again, the roving may be all right but the rolls and other supplies may not be of the best quality or in sufficient quantity for the work they are expected to handle. Sometimes the roving is all right and the supplies all that can be desired, but the spinner may have low speed help. This is usually the most serious condition and the hardest to remedy, for one cannot speed up help by changing pulleys. The best help are going where the most money is, every time. An overseer is always ready to let a poor hand go when he gets a chance to get a better one, and the result is that the poorer class of help must of a necessity, congregate where the least money is paid; it is no more than fair to expect low wages and low speed in the same mill.

The limit of speed at which ring spinning spindles can be run is the highest speed at which the belt can be kept on the tight pulley, and the work kept running good enough to produce good yarn without an excessive amount of waste. I have in several instances increased production by reducing speed and that when the speed was not high either.

It is the maximum amount of good yarn at the minimum cost per pound that every spinner should strive for, and I believe this is the object for which practical manufacturers will strive. I believe that spinners are as ambitious as any other class of men, and if a spinner can see where he can increase speed advantageously, he will not be slow to do so, but in the matter of speed, experience has taught me that it pays to be conservative.

WAAREN.

A Spinning Roll.

A method of coupling spinning rolls, shown in the illustrations, has recently been patented in this country.

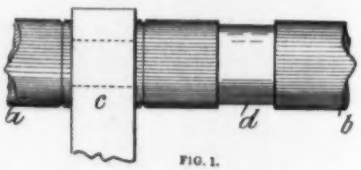


FIG. 1.

FIG. 3.

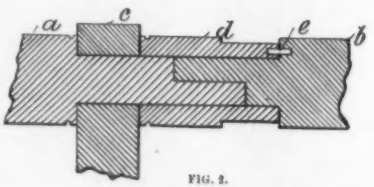


FIG. 2.

As stated by the inventor, the object is to make a simple and efficient interchangeable coupling by means of which two adjoining rollers can be readily and rapidly coupled together with a driving connection, and as quickly disconnected when required.

Figure 1 is an elevation of part of a line of rollers coupled together. Fig. 2 is a longitudinal section. Fig. 3 is a transverse vertical section taken through the coupling.

One roller, a, and the other roller,

b, are coupled. For this purpose the diameter of the adjoining ends is reduced to the diameter of the neck or bearing portion which is journaled in the roller-stand, c. These ends are half lapped, as shown in Figs. 2 and 3, so that when the half laps are brought together they make up the full diameter of the neck or bearing portion.

Over the lapped ends is fitted a sliding sleeve, d, this sleeve is fastened in the position shown on the roller by a key or any suitable device, so as to insure the positive driving of the sleeve, d, as well as of the two coupled rollers. For example, part of a pin, e, is fitted in a hole in the shoulder formed by the difference in the two diameters of the roller, b, and a corresponding hole is made in the end of the sleeve, d, to receive the other part of the pin, e, which keys the parts together to form a driving connection for the sleeve, d, the boss of which is fluted to correspond with the fluted portions of the rollers, a and b, and answers the same purpose.

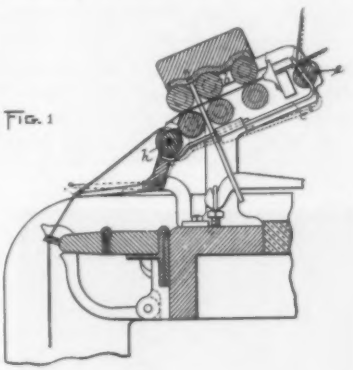
A Stop Motion for Spinning and Twisting Frames.

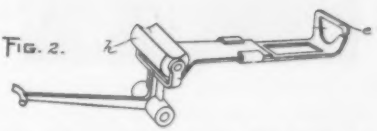
A device for stopping the delivery of the roving or yarn when an end breaks on a spinning or twisting frame has recently been patented in this country and is illustrated by Figs. 1, 2 and 3.

Figure 1 represents in front elevation the upper portion of a spinning or twisting frame. Fig. 2 represents a section through the same from front to rear. Fig. 3 represents a perspective view of the device.

In case the roving breaks between the front drawing-rolls and the thread-eye, the gravitating movement of the parts brings the idle roll, h, into contact with the fluted roll whereupon the roll, h, is rotated by friction. This rotation brings the angle on the roll, h, at one side of a recess into engagement with two of the corrugations of the fluted roll, and causes the latter to positively rotate the roll, h, until the recess lies against the periphery of the roll, d, as shown in dotted lines.

The positive movement thus imparted to the roll, h, aids the force of gravitation in depressing the clamp member, e, and causes the clamp members to firmly grasp and hold the





roving and insure its second breakage, thus stopping further delivery of the broken roving until it has been restored to its normal condition. The force of gravitation and the power that rotates the drawing-rolls is thus utilized in effecting the second breakage of the roving.

It will be seen that after the clamp has been closed on the roving it remains continuously closed until opened by the attendant, so that time is afforded for the breakage of the roving by the continued rotation of the drawing-rolls, the loose filaments of the broken end of the roving remaining in such relation to the nip of the first pair of rolls that when the clamp is opened, the rolls grasp the filaments and resume the drawing operation without further attention by the attendant.

WOOLEN DEPARTMENT.

Imperfections in Woolens and Worsteds.

LEWM.

In weaves of an ordinary cord or basket character, or in any weave where two or more adjacent ends work together, there is a tendency for the ends to change positions or roll around each other during the weaving process. To prevent this rolling it is sometimes necessary to reed the ends singly in each dent, but this is not practical for many cloths on account of the large number of dents per inch required.

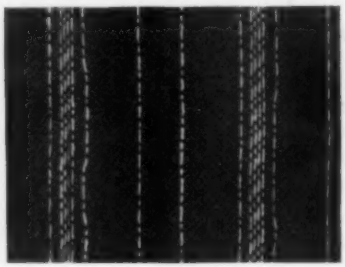


FIG. 2.

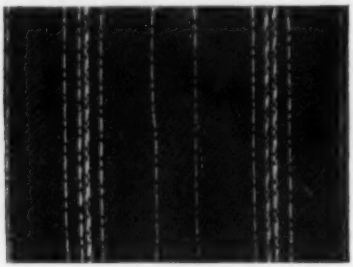


FIG. 3.

When the ends run together in pairs, they may be reeded two in a dent and still be prevented from rolling by reeding them as indicated by the marks in the lower part of Fig. 1; two ends that work the reverse of each other should be reeded together. Fig. 1 shows the regular 4-end basket weave.

In solid color cloths, or in colored stripe patterns where the ends that work similarly are also similar in color, this rolling tendency does not make any difference in the appearance of the cloth. If the ends are of the same color, they are sometimes drawn through the same heddle and are almost invariably through the same dent in the reed. For certain reasons the ends are at times drawn through separate heddles, but through the same dent.

If the appearance of the cloth will not be injuriously affected by rolling ends, it is advisable to draw those that work similarly in the same dent because they will weave better than when split with the reed. The rolling tendency of the ends is not limited to weaves in which successive ends work together throughout the pattern. Fig. 2 shows a pattern with the effect in the centre of the stripe as intended by the designer. Fig 3 shows the same pattern changed by a rolling of the white warp threads.

This defect is caused by the design or manner of interlacing the ends. Fig. 4 is the weave for a section of the cloth shown in Figs. 2 and 3, the ends marked solid representing the 6 white ends; all the ground ends, marked with crosses, weave plain.

Figs. 2 and 3 represent samples cut from the same strip or width of cloth. The four centre ends in Fig. 2 show what the designer evidently intended to produce. Fig. 3 shows that the appearance of the cloth is changed entirely on account of the ends rolling and not retaining their original positions.

It will readily be seen, especially in Fig. 2, that some of the single white ends appear to run in a zigzag direction. One single white end and one colored end have been placed in the same dent, the white end being drawn in at the right of the colored one.

The zigzag appearance of the white yarn is caused by its getting at the left instead of at the right of the colored one, staying there for a few picks, then retaining its original position, first on one side and then the other at irregular and uncertain intervals.

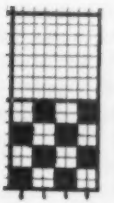


FIG. 1.

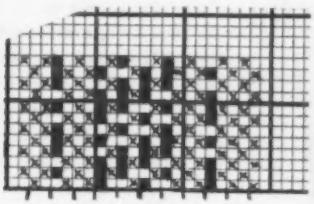


FIG. 4.

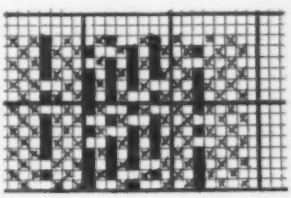


FIG. 5.

With the weave used for these cloths, this defect could have been prevented by reeding them as indicated by the marks in the lower part of Fig. 4, or by raising the ends marked solid one pick later than they are shown in this figure.

By examining Fig. 4, it will be seen that the ends marked solid change positions when the plain ends at the left are also changing. The white ends, solid squares, cannot roll over the plain ends at the right of them, even if placed in the same dent; they can roll over those at the left of them if reeded together because when the white ends change positions the plain ends at the left are also changing.

In weaves of a similar character to Fig. 4, the rolling may be prevented by a slight modification. For example, the white ends could have been woven with 13 picks to the repeat. This would necessitate a weave of 26 picks in order that both weaves would repeat together.

Figure 5 shows a modification of Fig. 4, in which the pattern of the white ends is repeated in 14 picks to match with the plain weave. The ends cannot roll with this weave, nor with any combination design in which both weaves have to be repeated before they both match together.

A Selvage Heddle Frame.

A device for supporting and operating selvage heddles is the subject of a recent patent. Fig. 1 is a side view. Fig. 2 is a similar view showing the body portion of the frame bent or sprung, so as to permit the heddles to be threaded on or removed from the frame, as indicated by dotted lines.

To form the selvages at the opposite edges of a piece of cloth which is woven in a loom, a number of heavy warp-threads are usually employed at each side. The selvage-thread heddles, through which the selvage-threads pass, have been threaded into or fastened into saddle-pieces at their opposite ends; these pieces are connected to the cam mechanism and returning-springs for raising and lowering the selvage heddles.

The inventor states that he has found this to be objectionable, as the heddles are usually supported so that they are liable to become twisted or snarled together, and in any event the entire strain of operation is brought upon the heddles themselves, while the ordinary construction does not allow the heddles to be readily replaced or renewed.

To overcome these defects, he has provided a construction in which the selvage heddles are carried in a frame, in which the heddles are mounted so that they are not liable to twist together, and instead of being borne by the heddles the strain of operation is taken upon the frame, which may be made as strong as necessary, and which is constructed

so that the heddles can quickly be threaded on or removed from the frame when it is desired to replace

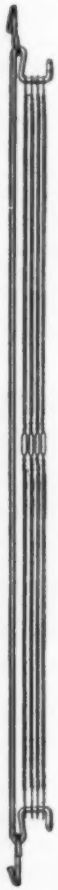


FIG 1.

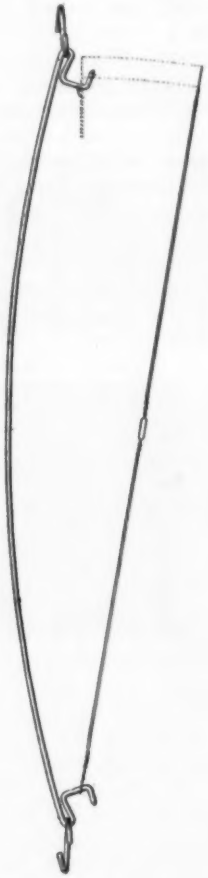


FIG. 2.

broken heddles or vary the number of selvage-thread heddles employed.

Finishing Wool and Mixed Fabrics.

X

BY N. REISER.

(Translated from the German for the Textile World.)

Continued from January.

(Copyright, 1901, by Guild & Lord.)

The felting quality is found in large measure only in certain grades of sheep's wool. This is due to the fact that the wool fibre is covered with minute scales, which gives it the appearance of a series of cornucopias or goblets placed inside of each other. The number of these scales varies with the quality of the wool; the straighter the fibre is, the less of these scales are present, and the fulling quality is poorer.

Fig. 31 shows four wool fibres. In the first two, a and b, the scales point upwards, while in the other two, c and d, the scales of one, c, point upwards and of the other, d, downwards. As the scales in both a and b point in the same direction, it is clearly impossible for them to hook on each other.

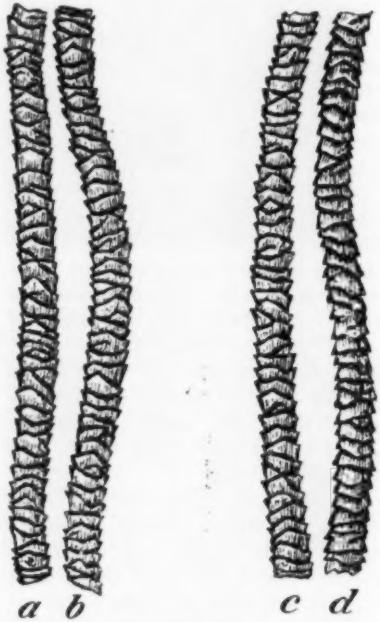


FIG. 31.

By reversing one of the fibres, as shown at c and d, the scales of one fibre hook on those of the other. By rubbing between the thumb and forefinger two fibres arranged like a and b, both will move in the same direction. If however, the relative position be reversed, as shown at c and d, the fibres will slide in opposite direc-

tions. This illustrates the fulling of wool.

These scales always point outward from the root of the fibre, as shown at a and b; consequently in the fulling process each fibre slides in the direction in which the root end points. It is evident, that the wool fibres in a piece of cloth do not lie in the parallel position represented at c and d, but cross each other at all angles. The movements of the fibres, consequently, do not take place in a parallel direction,

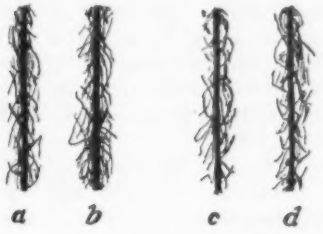


FIG. 31.

but each one moves more or less in its own path, so far as the twist and set of the yarn and the texture of the goods will allow. The root ends will, therefore, have a stronger tendency to move toward the centre of the fabric than will the points of the fibres; if the root end points outwards, it is possible for it to work itself free from the cloth and fall off in the shape of flocks.

This principle of felting wool is well illustrated, by taking a tuft of wool which has been washed on the sheep's back and binding it loosely in three or four pieces without disturbing the original position of the fibres. The wool is then saturated with a warm soap solution and rubbed for about twenty minutes. It will then be found that the tuft of wool has shrunk somewhat, and when it is unbound that the fibres can be easily separated from each other, and stretched out to their original length, thus demonstrating that the felting process has not taken place. If, however, the position of a portion of the fibres are reversed previous to fulling the sample, the fibres will felt together, and it will be found on unbinding the wool that they separate with difficulty and cannot be stretched to their original length. It is therefore evident that the fulling process takes place only when the scales in several fibres point in different directions.

The fact that worsted yarn does not full as readily as woolen yarn is due to the greater length of the wool fibres, to their having been drawn or

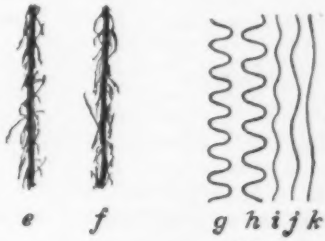


FIG. 32.

rubbed against each other in the process of drawing and spinning and to the relative position of the different fibres not having been disturbed as much as in the case of carded yarn. The relative position of the fibres is not changed from start to finish of the manufacturing operations after they leave the comb.

On the other hand the doubling of the strands in feeding woolen cards results in mixing the fibres up and causing more of the scales to assume the position shown at Fig. 31, c and d. The strands and, consequently, the fibres lie crosswise of the machine when passing through the feed rolls to the cylinder, and thus their original position is altered; it naturally follows that this re-arrangement increases the fulling quality of the material. Another reason for the greater fulling properties of carded yarn is that the fibres are shorter than in worsted yarn. The crossing of the strands in feeding the stock into woolen cards results in a breakage of the fibres. This is conclusively proved by the difficulty found in

reworking wool that has already been carded.

Rabbit hair is fulled by means of chemical solutions. Such fibres saturated with a 2 per cent. sulphuric acid solution full very well, with the exception of the long sharp hairs that are usually found in this stock.

The best fulling wool is that which contains the greatest number of scales and has the greatest number of kinks or bends in the fibre. Fig. 32 illustrates at g, h, i, j and k, five varieties of wool fibre. The one shown at g, has the largest number of kinks and possesses the highest fulling properties. From this the fulling quality diminishes until such fibres as (k) are reached, which are nearly straight and generally smooth owing to the absence of the scales.

In early times the difference between the wool used for worsted and that used for carded yarn was more sharply defined. Only the very long wools were used for worsted, the other being used for carded yarn, and at that time a greater percentage of noils was combed from worsted stock. This practice resulted in worsted yarn being composed of very long fibres, which reduced the fulling quality of the worsted goods and led, doubtless, to the opinion, so frequently met with even now, that worsted is naturally very hard to full. The change in methods by which much shorter wools are used for worsted yarns resulted in giving worsted goods which full very easily.

Short fibres full better than long, as they become entangled with each other more readily and the short fibre works its passage through the fabric with less difficulty. This movement takes place not only among the fibres of the same thread but also among fibres of different threads, lying either parallel with or at right angles to each other. At a certain point, however, a reduction in the length of the fibres tends to reduce the fulling qualities of the stock

Fig. 3 shows at a, b, c and d, four samples of carded woolen yarn; at e and f are shown two samples of worsted yarn. The much greater number of ends projecting from the woolen yarn cause the threads to full together much quicker.

New Patterns from Yorkshire.

BY S. B. H.

No. 1 seems to have nothing new about it, it being simply four and four check woven on the four end twill, straight draft. But there is something new about it, and it is to be found in the "make-up" of the cloth itself. Pre-eminently this cloth is for everyday wear, and is smart, attractive and cheap.

The cloth is somewhat cheviot, but it is only the black and white twist threads that are of a crossbred character. Crossbred wool, rags and shoddy of the same quality are cheap, and it is this fact which the manufacturer has turned to practical account. Every thread in the pattern is of merino quality except the black and white twist thread. The black stock used is nearly all stockings, spun to a fair thickness, while the white thread twisted round it is spun from merino quality to a very fine count, this, of course, being of merino quality. Hence we get a twist yarn the black of which is low crossbred spun fairly thick, the white being merino spun very small, the twist being very soft. It is this fact that gives to the pattern that peculiar attractiveness which is evident at first sight, the white in the twist popping up all over the cloth to break the check-like character of the pattern. The following is the lay out, with full weaving particulars attached: Weave: 4 end twill, straight draft.

Warp: 3 threads white, 3 threads black and white twist for 24 threads. 4 threads white, 4 threads black and white twist for 24 threads. 3 threads white, 3 threads black and white twist

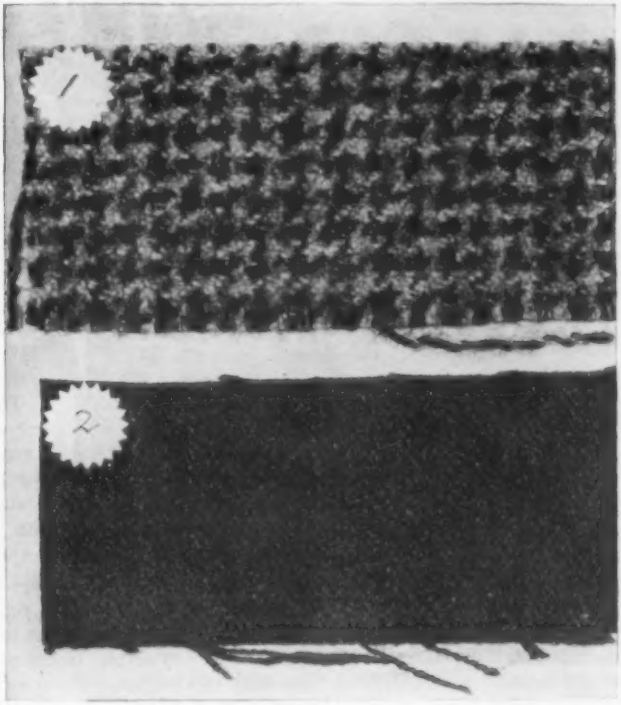
for 18 threads. 3 threads white, 1 thread black and white twist, 2 threads fancy, total 72 threads.

Weft same as warp. The twist is about the thickness of 2/12s for the black, and 1/60s for the white, worsted counts. 30 threads and picks per inch.

No. 2 is quite a different thing, but a fabric on which there is at this moment quite a boom. A large number of manufacturers are running all their looms overtime and one or two all night as well, on what are known as herring-bone rainproof covert coatings. These are made into overcoatings for the present winter season, manufacturers being inundated with repeat orders for this class of fabric. Greys tending towards very dark mixtures, but mostly made in green mixtures, are the most popular shades selling, and indeed both for this season and next winter they are certain to be the most favorite cloths.

The warp is all twist, composed of half woolen and half worsted. The black is woolen, and the white twisted with it is worsted. The black woolen thread should be spun to 40 skeins, and the white worsted should be finer. The warp throughout is all twist, and to make this particular cloth there should be 3800 threads. 15 dents per inch, 4 threads in each dent. Weft, 15 skeins black, 53 picks per inch. It is rather a low quality weft, made of course to fit the price of the cloth, and in this particular instance the blend for the weft was made as follows:

40 per cent of Peru cotton.
40 per cent. worsted mungo, black.



20 per cent. merino wool, or good noils, wool preferred.
100 per cent. total.

The material composing this blend costs here in Yorkshire not more than 18c. per lb. Much care is required in finishing this class of fabric, it should be cut very close and well steamed to give a nice soft feel, the great thing being to prevent its handling hard and cold. Price here 75 cents per yard, 55 inches, 18 ounces.

Cuban Imports.

—The United States cuts but a sorry figure in the Cuban import trade in textile goods. This trade in June, 1901, amounted to $512,255. The goods were classified as follows:

Cloths	$ 91,219
Muslins, etc.	268 073
Wearing Appare	13 746
Yarns and Thre ds	12,744
Quiltings	2,531
Velveteens	7,3:8
Laces	26,599
Knit Goods	71 722
Waste	3,744
All Other	14,649
	512,255

This is at the rate of over $6,000,000 per year, and the share of the principal countries in the June imports is given in the following list:

	Value.	Per cent.
United States,	$ 28,120	5.5
Great Britain,	261,078	51.
Spain,	134,613	26.2
France,	54,650	10.7
Germany,	19,102	3.7
All other Countries,	14,692	2.9
	$512 255	100

Evidently Cuba is another part of the earth that has not yet felt the "American invasion."

A Four-Cylinder Sanding and Polishing Machine.

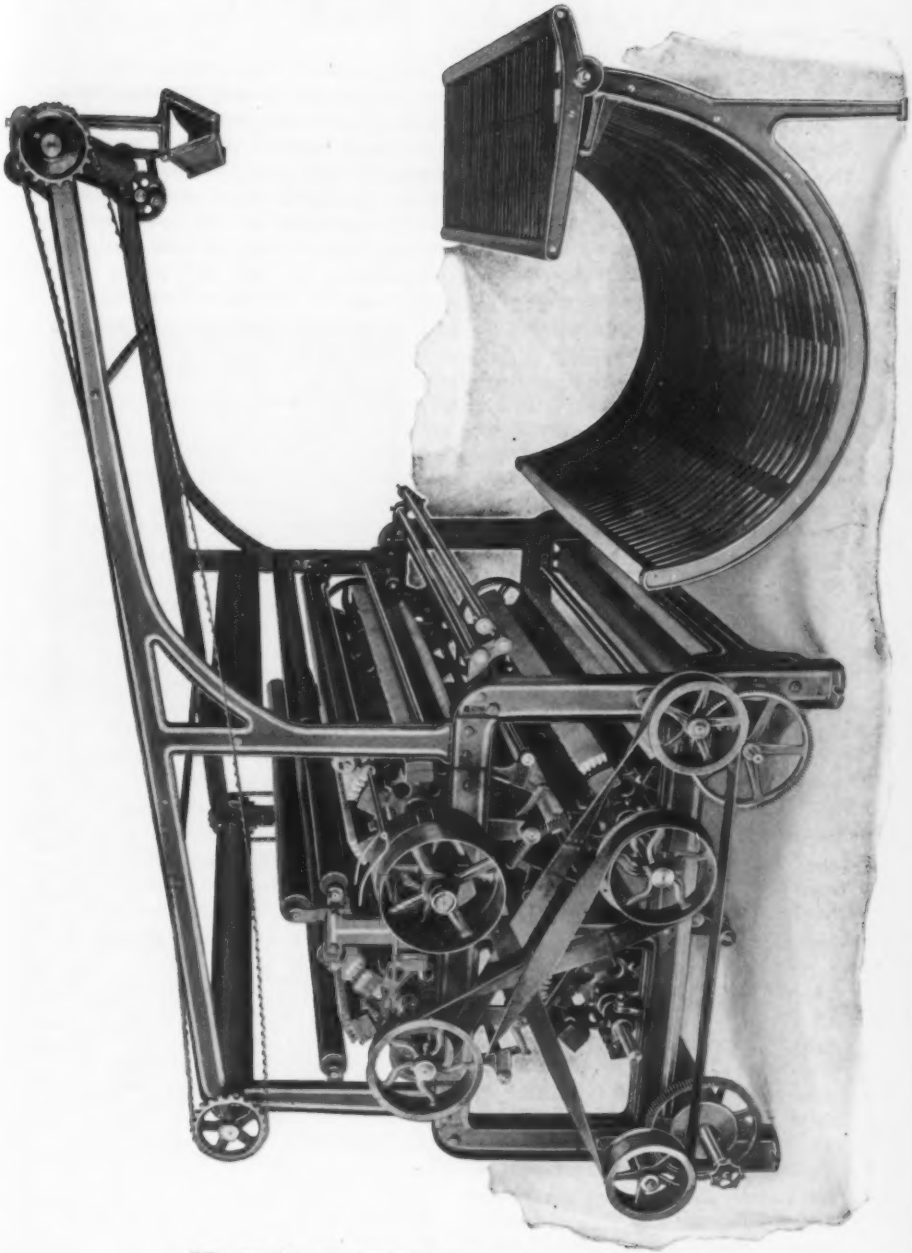
The accompanying illustration shows a machine for sanding and polishing cloths in one operation. It is built by the Parks & Woolson Machine Co., Springfield, Vt., and has given good results where used. The lustre of the cloths is heightened by polishing and the face is cleared, giving the thread a round, full appearance, which can be obtained in no other way than by polishing.

The cloth is applied to the cylinder in such a way, that it receives a beating or vibratory motion, which softens the fabric and gives it a very desirable handle. This feature is very valuable in finishing tightly woven fabrics, which have a strong tendency to handle stiff and hard. The machine is primarily designed for finishing plain and fancy worsteds and all hard faced goods, but it has been found valuable for finishing flannels, golf cloths and similar goods.

The polishing lags are set with alternate rows of stiff Russian bristles and fibrous whalebone. An adjustable steel supporting blade on each side of the lag prevents the outside row of bristles and whalebone from being broken down.

The sanding lags are covered with a high grade of garnet paper, which clears out the face of the cloth and removes all lumps, knots and threads. This paper is fastened by adjustable clamps, and can be easily replaced at a trifling expense.

Each cylinder has six lags secured on strong iron heads. The cylinders are run in opposite directions and there are two points of contact with the cloth on each cylinder. The cloth can be run on or off either or both cylinders as desired and is readily adjusted by a hand wheel for light or heavy pressure. When desired, the well-known steam box built by the Parks & Woolson Machine Co., is attached to this machine. This steamer has been in use for many years, and its merits are well known to our manufacturers. Further information regarding this valuable machine can be obtained from the builders, whose name is a guarantee of good work.



THE PARKS AND WOOLSON FOUR CYLINDER FINISHING MACHINE.

KNITTING DEPARTMENT

The Knit Goods Situation.

Many of the representatives of western jobbing houses have been in the market on heavy weight underwear for fall of 1902 and, while fairly liberal orders have been placed, the situation can hardly be called entirely satisfactory. The mills which are reported to have their production sold up for the season are few and far between and the vast majority of mill agents are still eager and anxious for business.

Practically no changes in prices have been made since the opening with the exception of some fluctuations in the prices of men's fleeces. One leading line which opened at $3.15 was, in a few days advanced to $3.25, but one day later was brought back to the opening price of $3.15, and in a few days was still further reduced to $3.12½; the price has since remained at that figure and no further change in this line is looked for.

On full trimmed standard weight 22 gauge goods, the prices range from $3.25 to $3.50 according to the character of the trimmings, but $3.50 is about the top figure which has been named on any line. Reports are current of some lines having been offered at $3.00 and even $2.87½, but investigations have brought out the fact that the goods were of inferior weight and finish. Taking it all in all, it would seem as though the fleece goods market is steadier this season than last, and it is not anticipated that the unfortunate cutting and slashing of prices that was a feature last season will be repeated this year. There is still ample time in which to sell fleeces, and, although buyers have been holding back to a greater extent than in former seasons, there is every reason to believe that eventually the total volume of business will be satisfactory.

Aside from fleeces, there seems to be a demand on the part of buyers for novelties and new ideas, but nothing particularly original in this direction seems to have been brought out, although there are some neat and effective patterns in randoms and stripes being shown by some of the manufacturers of fleeces.

The demand for goods for immediate delivery has kept up remarkably well and, the prospects are, that at the end of the present season, retailers and jobbers will have their stocks in unusually good shape.

A good retail demand is confidently looked forward to on all goods of an open work or mesh weave, more particularly in the line of men's wear. This class of goods has been gradually coming into popular favor, and the indications are that such goods instead of being classed as novelties, will come to be looked upon as a necessary part of every well regulated up-to-date stock. At the top of Fig. 1 is illustrated a mesh garment made by the Oneita Company, and sold freely by Bolger & Brewster at $2.75. This garment is made of an absorbent cotton treated by a chemical process which the manufacturers claim renders it as absorbent as a linen garment. It is made in a bleached white, and as there is every indication that white negligee shirts will be worn next season, this will undoubtedly be a very desirable undergarment.

The demand for union suits is increasing steadily both in garments for men's, women's and children's wear. As an indication of this tendency, it has been noted that many inquiries have been made for a good line of misses' winter weight union suits in sizes 32 to 42 to cost from $1.85 to $2.00 to be jobbed at $2.25, and one or two manufacturers who have shown samples of these goods have booked a fair amount of orders.

These should be good in silver, Egyptian and peeler, but the silver is possibly the best selling color. It has also been noted that buyers usually prefer this line with the seat gussetted. At the bottom of Fig. 2 is illustrated a ladies' summer weight union suit knee length with fun lace trimming which has been very favorably received. This garment is made from a fine bleached yarn and should appeal to the finer class of trade.

FIG. 1.

Hosiery lines for fall of 1902 are, as a rule, being shown and a fair amount of business has already been booked, particularly in the line of wool hose. On cotton goods, the tendency on the part of buyers has been to hold off and play a waiting game with the expectation of getting better prices later in the season but it is extremely doubtful if these expectations will be realized. For immediate delivery, fancies are in good demand both in ladies' hose and men's half hose and a record-breaking season for lace hosiery of every description is confidently looked forward to. The few domestic manufacturers who are equipped to make ladies' full fashioned lace hose have their productions sold up far into the season, and on many lines could have been fully sold up, had their capacity been double what it is.

From recent Chemnitz advices, it is understood that last season's business was more than usually satisfactory, and that the hosiery exports were considerably greater than in 1900. Extracted and printed goods are still on the dead list, but lace effects and lace embroidered goods are stronger than ever and it will be impossible to fully meet the demand. In embroidered goods, a decided preference has been manifested on the part of American buyers for small and neat designs. Drop stitched goods, with small embroidered figures in vertical striped effects, are much in demand and will rank well with the lace patterns. At Fig. 3 is illustrated a hose of this description which has been a good seller at $2.25 regular. The ground is, of course, black with Rembrandt rib,

FIG. 2.

while the embroidery is brought out in white, blue, and heliotrope either packed solid colors or assorted to the dozen. It may be noted here that black and white combinations are

considered extremely desirable and it will not be surprising if this season should develop a strong demand for ladies' white hose, for which there was a sudden craze late last season.

FIG. 3.

—A recent decision of the Board of Appraisers provides that certain cotton glove materials resembling knit goods, which are made on the Milanese machine, and of which the threads can not be counted by unraveling or other practicable means, are dutiable as manufactures of cotton, not specially provided for, under paragraph 322, tariff act of 1897, and not under the provisions (paragraphs 305 to 310) in said act for countable cotton cloths.

Finishing Underwear.

The finishing of underwear has now arrived at a state very near perfection, principally through improved machinery. Goods should be neatly finished, soft and lofty to the feel, lustrous in appearance, clear and bright if colored, with the design and finish pleasing. It pays to be particular. The smart appearance, the correct style, the perfect fit and the quality of the fabric, all tend to command respect. I know of some mills that are now idle from not having kept up to the times.

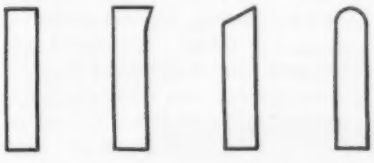
There are some mills running on a two-thread garment, that is a cotton thread on the back and a wool face, that averages twelve lbs. per dozen, making an exceedingly handsome and durable garment. These goods are made in all shades or colors, such as scarlet, orange, old gold, blue and the various tints of gray and drab. The shirts are made up with beautiful striped cuffs and borders, with fancy collars, silk bands the shade of the garment, with pearl buttons and neck stitched with an attractive shade of silk. The drawers have long ribs striped the same as the shirts. One large manufacturer has so many orders ahead that he operates his mill overtime to supply the demand. The time for placing on the market poorly manufactured and carelessly finished underwear has passed with the nineteenth century, and is not likely to return.

Goods to imitate wool and wool mixtures, must have a short nap raised on both sides of the fabric. Some of the nappers used for this work are made of stout hair and strong, hairy bristles, but the better plan is to use wire nappers kept in good order.

In practice there are four different conditions of the point of card clothing wire, and known by the following terms: pointed, wiry, flat and ground. Each of these points are totally different from each other, as the accompanying diagram will show. It is well when grinding to have a good magnifying glass to avoid making blunders.

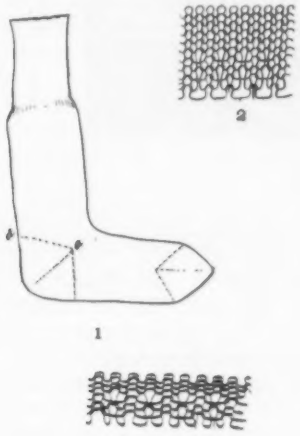
No. 1 illustrates the appearance of

a new wire which has not been used. It needs developing, which is done by the grinder. No. 2 represents the point of a wire which has been excessively ground by the emery roller,



1 2 3 4

and produces a point as shown. Such a defect is very hard to remedy. If the points are firmly set, it will be necessary to face them by reversing against the emery grinder, holding a



1 2 3

hand card against the revolving surface until the roughness disappears. The clothing is then ground again.

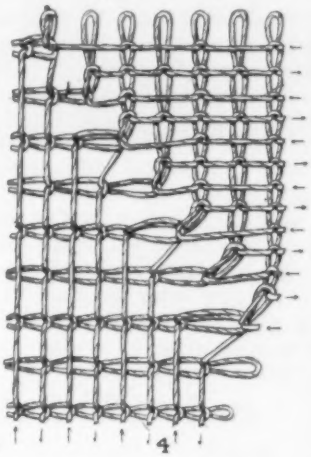
No. 3 represents what is known as the wiry point, on account of the sharp, wiry character which the bevel necessarily imparts to the wire. This feature is also due to severe and ed point, the result of continuous excessive grinding. No. 4 is a roundwear. The constant friction of the materials which pass through the machine has a natural tendency to gradually wear off the ends of the wires, and, notwithstanding the character of the clothing or the excellence of its condition, they eventually wear to the form shown. By reversing the rollers, card clothing on nappers will last for months without grinding.

OLD SUPERINTENDENT.

A Patent Stocking.

The accompanying diagrams illustrate a method of knitting hosiery which has recently been patented in this country.

Fig. 1 is a side elevation of a stocking with the cone-shaped toe and heel portions marked. Fig. 2 is an elongated view of the knitting-stitches used. Fig. 3 is a reversed view of the stitches, showing the appearance from



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the back of the fabric. Fig. 4 is a detail view showing, on an enlarged scale, the loops by which the triangular sections are joined to the adjacent fabric.

This invention is for the production of stockings which have heels and toes knitted in a different manner from the remainder of the fabric to produce a firm and well-wearing fabric at these points.

The other portions of the stocking or sock, save the heel and toe, are made with a common flat or rib or other stitch; when the heel or toe is reached the stitch is changed to what

is called the "lock-stitch," or one which is formed by knitting all the working needles in one direction and then working every alternate needle in the reverse direction until the heel or toe is completed.

In this way a very desirable and strongly knit heel or toe is made from a single thread, and one which, it is said, cannot feel uncomfortable to the wearer, as one surface will feel very much the same as another, the stitch forming a mock rib on one side of the fabric only and tightly-drawn wales on the other side.

As soon as the line, a d, is reached and one-half of the knitting-needles have been thrown out of operation, the knitting the first triangular section of the heel is begun by knitting one way with all the active needles. When one course has been completed every alternate needle is arranged so that it will not rise to release its loops from its latch and take fresh yarn. Thus every other needle will perform the knitting operation in this course.

The next course is knit with all the active needles in operation again, after which the full course will again be knit with every other needle. The courses will thus alternate until the whole conical fabric comprising the heel or toe has been completed.

Because of the skipping of the stitches where the alternate needles have not operated and the reaching of the stitches in alternate courses across the long stitches, the fabric will be of a somewhat heavier and closer-woven texture than the remainder of the stocking and will have a greater wearing quality than the ordinary plain stitch will afford. It is claimed that such a stitch in practice forms an ideal heel and toe for a stocking or sock, the loops being all on the outside of the fabric, presenting mock ribs on the said outer side and wales on the inner side, drawn tight from alternate stitches.

It will be noticed that in using a tuck-stitch to form the triangular section constituting this heel, the portions of the strand of yarn used in knitting the course which is knitted with alternate needles only can be drawn tight, or they can be pulled down with the hooks of the inactive needles, thus forming bent spanning portions. The inventor states that the heel made of straight or tightly-drawn portions is the strongest, and, as the conically-knitted heel gives the proper amount of space for the heel of the stocking, he prefers to draw these spanning portions of yarn tightly, which span alternate needles, thus forming a strong fabric with but little give.

Ramie in California.

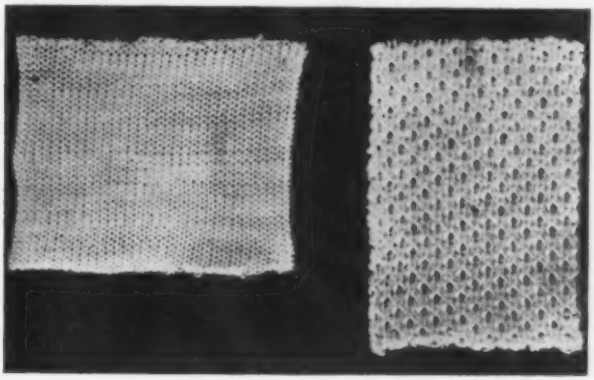
In the September issue of the Textile World, our foreign correspondent described a process and called attention to the manufacture by Gustaf Ringheim, Sweden, of ramie underclothing. Since then the proprietors of this process for manufacturing ramie have established a branch in California. This state was selected, owing to the favorable climatic conditions for the cultivation of ramie and hemp. The branch establishment is termed the Ringheim Ramie Manufacturing Co. Their offices are at 14 Sansome Street, San Francisco, Cal.

They have acquired control of a recently invented decorticating machine for treating the hemp and ramie fibre, which it is said produces a better fibre at much less expense than can be obtained by hand labor. They are making active efforts to encourage the cultivation of these fibres in California, and are arranging to supply the farmers with seed and ramie roots, together with information in regard to the best method of cultivating the fibre. It is said that if hemp is sown in February, three crops can be obtained in one season.

We illustrate two samples of ramie knit goods manufactured by this concern. Ramie fibre is said to be especially well adapted for clothing. Among the claims made is that it has

an airy cellular tissue; that the fibre does not felt; that it facilitates perspiration; is cooling in oppressive heat; warming in cold weather; that it does not feel damp or chilly after perspiration, and has a favorable action on the nervous system.

We have received a sample of ramie grown in California, decorticated by the Ringheim machine. The fibre is long and lustrous and promises well for the future of this industry.



RAMIE KNIT GOODS.

—The practice in India of marking cotton yarn several numbers higher than the actual size is calling forth protests from the English spinners who are required by the Merchandise Marks Act to mark their yarn with the actual size. They claim that an Indian 30s does not average more than 26s, while the English 30s, although marked no higher, reels the full four numbers finer.

—A machine has been patented in France, which, it is claimed, does the work of a hydro-extractor and steaming machine, at the same time sizing the goods. It consists of a perforated cylinder, on which the goods are wound; one end is closed and the other end connected with a pump; underneath is a trough. Water or steam is driven through the goods by the pump, and the drying is effected by forcing hot air into the pipe, whence it passes through the cloth. The goods are sized by lowering the roll into a trough containing the size. The liquor is then sucked through the goods by the pump, which ensures a thorough saturation of the goods.

—The Board of General Appraisers have decided that finished articles of cloth, such as couch covers and horse blankets, with whipped or stitched edges, made wholly of cotton, are included in the definition of "cotton cloth" in paragraph 310, act of 1897, as consisting of "all woven fabrics of cotton in the piece or otherwise," and are therefore dutiable as such, under the countable clauses of that act, and not under paragraph 322, as "manufactures of cotton, not specially provided for."

—There is no one who would not be more obliging if certain of gratitude. —Etienne Coeuilhe.

—We should not give to the indifferent the power to make us suffer. —Marie Bashkirtseff.

—Why are not the rich compelled to give? . . . the poor are compelled to receive.—Adolphe d'Houdetot.

Sizes for Underwear and Hosiery.

The following tables were compiled as a result of correspondence with many manufacturers and consultation with leading retailers. They originally appeared in the Dry Goods Economist and have been revised by the TEXTILE WORLD, and are again reprinted by request.

UNDERWEAR.

Ladies' Shaped Ribbed Vests.

No.	2	3	4	5	6
Bust	32	34	36	38	40
Length	30	31	32	33	34
Width	11	12	13	14	15
Sleeve	18	19	19	20	20

Ladies' Drawers (Ankle Length).

No.	2	3	4	5	6
Band	26	27	28	29	30
Body Length	13	14	15	16	17
Inseam	23	24	25	26	27

Misses' and Children's Shaped Ribbed Vests.

Size	12	14	16	18	20	22	24	26	28	30
Length	12	14	16	18	20	22	24	26	28	30
Width	7	7	7	9	9	9	10	10	11	12
Sleeve	9	10	11	12	13	14	15	16	17	18

Children's and Misses' Ribbed Pantalets (Ankle Length).

Size	12	14	16	18	20	22	24	26	28	30
Waist	17	18	19	20	21	22	23	24	25	26
Body Length	8½	9	9½	10	10½	11	11½	12	12½	13
Inseam	10	11	11½	13	15	17	19	21	23	25

Ladies' 2 and 2 Ribbed Vests.

Size	2	3	4	5	6
Bust	32	34	36	38	40
Length	29	30	32	34	36
Width	8	9	10	11	12
Sleeve	18	19	20	21	22

Ladies' 2 and 2 Ribbed Drawers (Ankle Length).

Size	2	3	4	5	6
Band	26	27	28	29	30
Body Length	13	14	15	16	17
Knee Inseam	13	14	15	16	17
Ankle Inseam	23	24	25	26	27

Misses' 2 and 2 Ribbed Vests.

Size	12	14	16	18	20	22	24	26	28	30
Length	13	15	17	19	21	23	25	27	29	31
Width	6	6	6	7	7	7	8	8	8	8
Sleeve	10	11	12	13	14	15	16	17	18	19

Misses' 2 and 2 Ribbed Pantalets (Ankle Length).

Size	12	14	16	18	20	22	24	26	29	30
Waist	17	18	19	20	21	22	23	24	25	26
Body Length	8½	9	9½	10	10½	11	11½	12	12½	13
Inseam	10	11	11½	13	15	17	19	21	23	25

Girls' or Boys' Ribbed 1 and 1 Pantalets.

Size	16	18	20	22	24	26	28	30
Waist	16	18	20	22	24	26	28	30
Body Length	9	10	11½	11	11½	12	12½	14
Inseam	11	13	15	17	19	21	23	25
Full Length	19	22	24½	27	29½	32	34½	37

Boys' Ribbed 1 and 1 Drawers.

Size	24	26	28	30	32	34
Waist	24	26	28	30	32	34
Body Length	10½	11	11½	12	12½	13
Full Length	25	26	30½	33	35½	38

Boys' Ribbed 1 and 1 Vests.

Size	16	18	20	22	24	26	28	30	32	34
Lengths	14	16	18	20	22	24	26	28	30	32
Widths	8	8	8	9	9	9	10	10	10	11
Sleeve	9	10	11	12	13	14	15	16	17	18

Boys' and Misses' Flat Vests.

Size	16	18	20	22	24	26	28	30	32	34
Width	16	18	20	22	24	26	28	30	32	34
Length	13	14½	16	18	20	22	24	26	27½	29
Sleeve	7	8	9	10½	12	13	13½	14½	15½	17

Boys' and Misses' Flat Pantalets

Size	16	18	20	22	24	26	28
Waist	16	18	20	22	24	26	28
Body Length	8½	9	10	11	12	13	13
Inseam	9	10½	12½	14	16	17	18

Boys' Flat Drawers.

Size	24	26	28	30	32
Waist	24	26	28	30	32
Inseam	18	21	24	25½	28
Rise	10	11½	11½	12	14
Back	11½	12½	13	14	15½

Men's Flat Shirts.

Size	34	36	38	40	42	44	46
Chest	34	36	38	40	42	44	46
Length	29	30	31	32	33	34	35
Sleeve	17	18	19	20	21	22	22

Men's Flat Drawers.

Size	28	30	32	34	36	38	40	42	44
Waist	28	30	32	34	36	38	40	42	44
Inseam	27	28	29	29	30	30	30	30	31
Body	13	14	15	15	15	16	16	16	17

Ladies' Flat Vests.

Size	30	32	34	36	38	40
Bust	30	32	34	36	38	40
Length	30	31	32	33	34	35
Sleeve	15	16	17	17	18	19

Proportion of Length to Weight.

All manufacturers should make extra sizes in shirts and drawers to suit stout people. The length of these out sizes should not be increased; only the chest and waist measure in shirts and drawers should be larger. Sizes should also be made for slender people in extra lengths, but without increased widths.

Drawers should also be made in extra sizes in the bands to fit children with extra large waists.

Tables for Selecting Children's Underwear. According to Age.

Shirts.

Age.					Size.
6 months	to	1 year	requires		16
1 year	to	1½ years	"		18
1½ years	to	2 years	"		20
2 "		4 "	"		22
4 "		6 "	"		24
6 "		8 "	"		26
8 "		10 "	"		28
10 "		12 "	"		30
12 "		13 "	"		32
13 "		14 "	"		34

Drawers are selected one size smaller than shirts for the same ages.

HOSIERY.

Hose and half-hose must measure in inches, from the toe to the heel, the same number as the size. Thus, size 8 must measure 8 inches, and so on. This rule is invariable, and hosiery not coming up to this standard is returnable to the vendor. The length of leg should not be less than 27 inches.

The following sizes of hose are used in connection with the corresponding size of shoe, and this table will be useful to dealers.

Ladies' Hose.

Size of Shoe.	Size of Hose.
1½ to 2	8
2½ to 3	8½
3½ to 4½	9
5 to 5½	9½
6 to 6½	10
7 to 8	11

Infants' and Misses'.

Age.	Size of Hose.
3 months requires	4
6 " "	4½
1 to 1½ years requires	5
2 to 2½ " "	5½
3 to 4 " "	6
4 to 5 " "	6½
6 to 7 " "	7
8 to 9 " "	7½
10 to 11 " "	8
12 to 13 " "	8½

Ribbed Hosiery.

Children's ribbed hose should measure in the length of the leg at least 2 inches longer than the plain goods, to allow for the drawing up when put on. The usual rule of the hose, being three times the length of the foot, is right for plain goods.

In bicycle hose for boys, 9, 9½, 10, 10½, 11, the length should be 2 inches more than three times the length of foot.

Size of Shoe.	Size of Hose.
4-5	9
5-6	9½
6-7	10
7-8	1 ½
8-9	11

Men's Half-Hose.

In men's half-hose the 9-inch should measure 12½ inches in length of leg, and the 9½, 10, 10½, 11, 11½ increase ½ inch as the sizes enlarge, so that the 11½ will measure 15 inches long from bottom of heel to top of rib top.

Size of Shoe.	Size of Half-Hose.
6	9½
7	10
8	10½
9	11
10	11½

To Find the Size

If a lady does not know the size of her shoes, ask her to double up her fist, thumb inside, and measurement around the hand with the hose will nearly always tell. The toe and heel should meet in this measuring around.

Hosiery Must Be Elastic.

Elasticity in hosiery is the vital principle of its make-up. No matter how fine the finish, the gauge or the quality of yarn, non-elastic hosiery in ladies', men's or children's is a thing to be positively avoided.

In selling children's woolen hose allow half a size extra for shrinkage.

—The progress made in India in spinning the higher counts of cotton yarn is shown by the following tables compiled from official statistics recently issued:

	Imports of long-stapled cotton. Cwt.	Yarn spun No. 31 and upwards. lb.
1896-7	36,239	5,501,723
1897-8	29,837	5,884,313
1898-9	35,833	5,823,000
1899-1900	161,151	7,906,074
1900-1	173,338	13,626,143

The rapid increase in this branch of the cotton spinning is viewed with considerable anxiety by English spinners, as they believe that in time it may deprive them of their heretofore lucrative Indian market for fine yarn.

SILK DEPARTMENT.

Artificial Silk.

The high cost of natural silk has always been an incentive to inventors in their search for a substitute that would possess the strength and lustre of the natural product. The first patent for artificial silk was issued in 1885 and samples were exhibited at the Paris Exposition in 1889.

Many difficulties were met with at first. The highly explosive and inflammable character of the material was one of the greatest objections. This defect has been remedied by the process of treating the silk with a cupric ammonia solution and then in phosphorate of ammonia. This process reduces the inflammability of artificial silk below that of cotton. Companies in both France and Germany engaged in the manufacture of the artificial product, and, as the price was much below that of natural silk while the lustre was even higher, a ready market was found for all that could be produced.

To offset the advantages that we have named, artificial silk possesses certain defects. The dry artificial silk possesses less than half of the strength and considerably less elasticity than true silk. For this reason, its use has been confined to the filling of goods with a warp of natural silk, mercerized cotton or worsted. It is used extensively in the manufacture of tie stuffs, novelty goods, decorations and passementerie. Still more objectionable is the lack of strength. The tendency of artificial silk when wet is to disintegrate like wet paper. For this reason great care is necessary in dyeing and washing the material. Experiments made to determine the effect of various solutions on artificial silk gave the following results:

1. A sample of Chardonnet silk was boiled one hour in distilled water. Upon taking the sample out, it was found to be soft and it parted when subjected to slight tension.

2. A sample of artificial silk was steeped one hour in a strong solution of acetic acid. The result was similar to that of No. 1 test. When dry the silk possessed the well known quality called scroop, caused by the acid. This scroop was, however, much less than is found in natural silk.

3. Treatment in a hot solution of Marseilles soap gave the same result as No. 1.

4. A treatment in benzine for one hour caused no change other than that the fibre appeared somewhat harsher after the benzine evaporated.

The following methods are employed for distinguishing Chardonnet artificial silk from natural silk.

a. A yellow color is imparted to the liquor when the artificial product is dissolved in an alkaline solution. In the case of natural silk the liquor is colorless.

b. Artificial silk burns quickly in a flame, and very little ash remains True silk carbonizes when burnt.

c. Artificial silk is reddened when treated first with sulphuric acid and afterwards with brucine; a small quantity of diphenylamine causes a blue color since nitric acid is always present in the fibre.

d. Natural silk is dissolved in a solution of 10 grams of sulphate of copper and 5 grams of glycerine in 100 cm. of water to which sufficient alkali is added to dissolve the resulting deposit. Artificial silk is not soluble in this solution.

By far the largest part of artificial silk is at present manufactured by the Chardonnet process. Recently a new artificial silk called "glanzstoff" has been put on the market. It is obtained by dissolving cellulose in cupric oxide of ammonia and possesses considerable lustre and strength.

There was exhibited at the Paris Exposition in 1900, an artificial silk called "viscoid," that possessed many

good qualities; this silk has not yet been placed on the market; as its name indicates, it is obtained from viscose.

With the exception of Vandura silk, which is made by treating gelatine with formaldehyde, cellulose is the material from which artificial silk is made. Cotton is nearly chemically pure cellulose, and for this reason the action of dyestuffs and chemicals is much the same, on both cotton and artificial silk.

The Chardonnet product, owing to the nitric acid in its manufacture, is much more susceptible to the action of most dyestuffs than is cotton. Thus artificial silk can be dyed with the basic dyes, all shades from the brightest to the darkest without preparation with tannin and antimony salts. As brightness and lustre are more important than fastness in the dyeing of artificial silk, the basic dyes are specially adapted for this material. The dyeing process is simple and sure. Acetic acid is added to the bath and the material entered cold. This liquor is heated gradually, the fibre absorbs the liquor quickly and the color develops very evenly. Although, as already observed, the wetting of artificial silk reduces its strength, there is not much danger in this respect if the material is handled carefully.

The substantive dyes rank next to basic dyestuffs for dyeing artificial silk. For the dark shades the material is entered cold in a soap bath containing common or Glauber salt. The artificial silk absorbs the substantive dyes more readily than does cotton, otherwise the action is the same. Owing to the reduction of the strength of artificial silk when wet, great care must be used in handling the material in this state. Violent boiling should be avoided, and after rinsing it is best to extract the material with rubber rolls under light pressure. Sulphur colors are less used for coloring artificial silk, as the shades obtained are duller and the fastness of the substantive dyes answers every purpose. The use of mordant dyes is excluded because all mordants injure the lustre of artificial silk.

The price of Chardonnet silk has heretofore averaged about $2.20 per pound, and recently was advanced to $2.30. The price will probably decline in the future as many new establishments for producing artificial silk are building, artificial silk, will, doubtless, play an important part in the textile industry.—Oesterr, Wollen and Leinen Industrie.

The Silk Industry Abroad.

A report upon the silk industry in France, containing much interesting information has recently been issued by the French Journal Officiel. Referring to the method of carrying on the manufacture of silk goods in France, the report states that the silk mills operate in three different ways: First, "a facon," in which the cocoons are reeled into skeins for a third party, based upon an agreed price for the work; second, "a forfait," in which the proprietor reels upon his own account cocoons which he has bought; third, "de compte a demi," in which he shares with the silk merchant, or with some outside person, in buying the cocoons and in selling the raw silk, retaining a certain sum for the work performed.

The labor done by hands working for themselves or on shares is the most extensive, as the profits of the spinning are often wiped out in the commercial transaction of buying the cocoons and selling the silk; the profit or loss depends much more upon the rise or fall of silk quotations than upon the value of the labor calculated in the cost of the silks.

In a general way, one may say that the cost of the work of weaving has been sensibly raised, due to different causes, in which figure the rise of salaries, and the high price of coal. Complaint is made that in certain

sections, hand labor is becoming scarce; production suffers, therefore, and general expenses are increased.

The schappe silk industry has suffered much from the popularity of mercerized cotton.

The reeling of schappe is in the hands of a few people, who form powerful groups and possess all the resources necessary for producing a large quantity of goods of perfect finish.

The Cry of Silk.

Of all textile materials silk is the only one that possesses the peculiar property of emitting a rustling noise, called the "cry" of the silk. This peculiarity is manifested especially when silk fabrics are subject to friction. It is found, however, in silk yarn previous to being woven into cloth. It results from the friction of the different filaments when they are subjected to a somewhat energetic pressure and friction. A skein of silk when opened up may emit this cry but slightly, whereas, when it is squeezed tightly in the hand the crackling noise becomes quite audible. The intensity of this phenomenon varies with the methods of the dyeing and mechanical processes to which the silk has been previously subjected, and also with the size and twist of threads, and, in the case of woven goods, with the weave and texture of the materials.

This "cry" or scroop is considered a desirable quality in the silk, and dyers seek to develope it as much as possible. It is entirely lacking in raw silk, whether in the form of skeins or in the woven goods, and is found only in silk which has been boiled off, or at least subjected to the process of soupling. Nevertheless, it is not the process of boiling off that imparts this property to the silk. In the case of colored silk, it is said to be independent of the shade of the coloring matter employed. This scroop may be imparted or not, as desired, to silk of the same color.

According to M. David Basle, the author of an excellent work on silk dyeing, the scroop depends upon the nature of the last bath to which it has been subjected. According to this authority all silk has this quality when it comes from a bath containing free acid or acid salts, and on the other hand is without scroop when it comes from a soap or alkaline bath or a solution of neutral or basic salts. This arbitrary statement must, however, be taken with certain reservations. The writer admits, that in the case of boiled off silk containing albumen side by side with the silky matter the effect of the acids consists in a modification of these two substances and that quite probably a sort of coagulation of the albumen takes place. In the case of the scroop his explanation is that each filament has been made harder and harsher by the acid, and that when a mass of silk thus hardened is subjected to pressure the cry or scroop is a natural consequence.

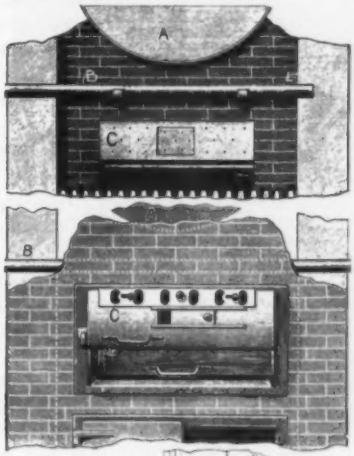
On the other hand, it has been stated that a most efficient agent for imparting lustre and scroop to silk is an acid soap. Now if all acids impart this quality to silk, we prefer to believe with M. Schutzenberger that the effect is produced by fatty acids set at liberty, since it is found only in silks previously treated with soap. Boiling in pure water alone is sometimes sufficient to impart scroop to silk, while an acid bath is necessary to produce it when the water contains lime or when carbonate of soda has previously been added.

A special treatment is necessary to give scroop to dyed silk. Generally, the silk is passed first through a weak soap bath or through an emulsion of olive oil and carbonate of soda, and then treated in a weak acid bath; or the silk may be first treated in a fatty and acid bath such as is obtained by diluting with water the product obtained by the action of concentrated sulphuric acid on olive oil. Jules Persoz, Le Conditionnement de la Soie

POWER DEPARTMENT

The "Hydro Carbon" System of Firing Steam Boilers.

The "Hydro-Carbon" system is designed to provide the proper admission of air over the fire at the proper temperature, and is very simple yet effective in its construction, installation and operation. A patent steel door "C" shown in the illustration is substituted for the regular fire door of the furnace, and so arranged as to admit air through a lower apron with ratchet attachment, "H," Fig. 3, in a thin sheet and, after heating by contact with deflecting plates, is passed over the fire surface; air is also admitted at top of the door through small perforations, and a peep hole is provided for observing conditions of fire without opening the door. The fire can be broken up or sliced through lower part of the door without opening the door, as less frequent fireing is required; it will be seen that the chilling of fires by opening doors is prevented.



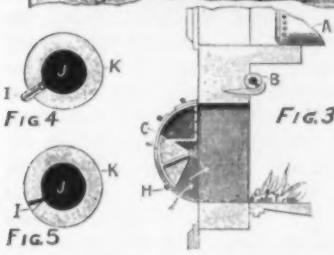


Fig. 4 Fig. 3

Fig. 5

A heavy metal retort, B and K, is placed over the doors exposed to interior of the furnace; steam at 10 to 15 lbs. pressure is supplied to this retort, and is superheated and decomposed by the intense heat, and injected into the fire chamber through small openings, I, in form of hydrogen gas.

It is claimed that the combined elements not only mix up the combustible gases over the fire, but form new combinations, changing the carbonic oxide into dioxide gases, and adding additional heat units, increasing temperatures of the fire chamber, and raising perceptibly the ratio of evaporation, also preventing the escape of carbon unconsumed in form of smoke from the burning of bituminous coal. The condition of ash in the ash pit is said to show almost perfect combustion and the temperature of flue gases at the stack are very much reduced. Between 200 and 300 boilers have been equipped with this device, and many evaporation and smoke abatement tests made, showing from 10 per cent. to 30 per cent. increase in evaporation and same proportion in amount of coal burned, and abatement of smoke satisfactory to and approved by the smoke inspectors of many large cities (New York, Philadelphia, Chicago, Indianapolis and many others.)

Further information with copies of tests, circulars, recommendations etc., can be had by application to the office of the Steam Boiler Equipment Company of New York Inc., 20 West Houston St., Gleason Building, or at the Philadelphia office, 614a Drexel building.

Cost of Power.

What does the horse power cost per hour with various methods of generating power? An engineer answers this question in the Bruenner Monatschrift as follows:

A man of average endurance can turn a crank 13¾ inches long against

a pressure of 15½ pounds for eight hours per day at a speed of 30 revolutions per hour, at 60 cents per day for labor one horse power costs on this basis 69 cents per hour.

The power of oxen working on a pug mill costs 18 cents, while that of horses under the same conditions costs 16 cents per horse power per hour.

A six horse power steam engine operated on a farm 150 days of 10 hours each per year will furnish power at a cost of 3 5/8 cents. The power of a petroleum engine costs somewhat more, say 6 cents.

Wind mill power is much cheaper, amounting to not more than 1½ cents, even for small mills of a single horse power.

Water wheels furnish the cheapest power at a cost of ½ to ¾ cents per horse power per hour.

The New Plant of the A. T. Atherton Machine Co.

One of the latest additions to the industries of Pawtucket, R. I., is the new works of The A. T. Atherton Machine Company located on Prairie Avenue, on the India Point branch of the New York, New Haven & Hartford Railroad.

The plant, a view of which is shown on another page, which will soon be occupied, was designed by Dr. Dwight Seabury of the same city, and is of very solid construction, having all modern appliances to make it a model up-to-date structure.

It is especially adapted to the manufacture of the machinery made by this firm and everything has been so planned as to facilitate the systematic handling of the work to insure the lowest possible cost. The buildings will be lighted by electricity, and heated by steam throughout; the motive power will be furnished by the Pawtucket Electric Company. The main part of the building is two stories high 160 ft. long by 60 ft. wide; the ell which is to be used as a setting-up room, is 80 by 50; there is a fine basement 140 by 50 ft.

A large tract of the surrounding land belongs to the company, and the buildings are arranged so as to facilitate quite extensive additions when the manufacture of additional lines of textile machinery now contemplated is undertaken in the near future.

The heating apparatus is located in an outside building, and in this same building will be found the blacksmith shop and grinding room, thus greatly reducing the fire risk. A full sprinkler equipment is to be installed, and in fact the aim has been to make this one of the finest manufacturing plans in the vicinity. The offices are located on the upper floor so that the main office, private offices and drafting room, are all connected.

The A. T. Atherton Machine Company are successors to the Potter & Atherton Machine Company which was established in 1887 by Messrs. A. T. Atherton, Charles T. Atherton, James C. Potter, Allen Whitehead, John Marshall, John Draper and Daniel T. Brown, all of whom were formerly associated with the Atherton Machine Company of Lowell, Mass.

When the Potter & Atherton Machine Company was first organized, they hired the basement of the large brick building on Broad Street, belonging to the Broad Street Power Company, but their growth was so rapid that they soon had additional buildings constructed until their floor area was 23,000 sq. ft., and they occupied six floors instead of one. In 1893 Messrs James C. Potter and Daniel T. Brown sold their interests to the Company and the name was changed to The A. T. Atherton Machine Company.

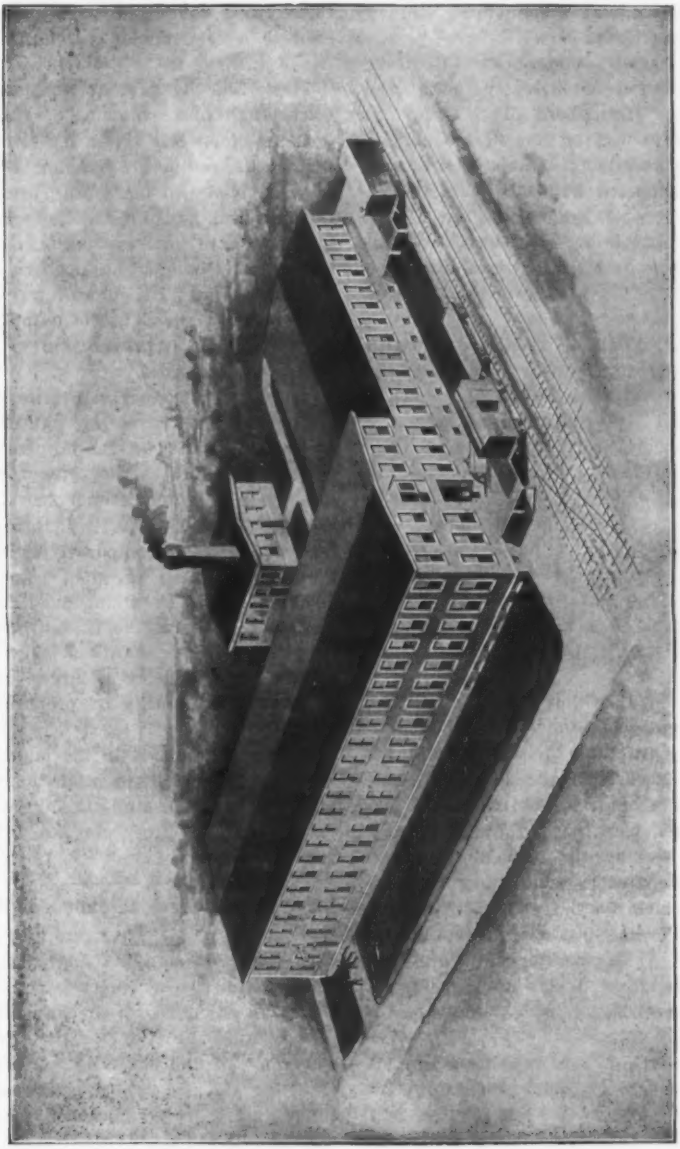
In 1896 the Company was re-organized retaining the same name, however, and none of the original founders are now connected with the concern.

The present officers are E. L. Free-

man, president; George W. Stafford, vice-president; Fred Anthony, secretary and treasurer; Fred A. Wilde, general manager.

The active officers are the secretary and treasurer and general manager.

Mr. Fred Anthony is a native of Coventry, R. I., and has held a num-



NEW PLANT OF THE A. T. ATHERTON MACHINE CO., PAWTUCKET, R. I.

The Board of Directors is composed of the president and vice-president, ex-officio, Edward Smith, Darius L. Goff and George M. Thornton.

ber of responsible positions in various concerns, the most notable of these being his association with the Congdon & Carpenter Company of Provi-

dence, R. I., with whom he was connected for about seventeen years. His business training makes him admirably adapted for the office he now holds, and his naturally even disposition and genial ways win for him a host of friends.

Mr. Fred A. Wilde, began his career in the textile industry with the George W. Stafford Mfg. Company, of Providence, makers of looms, jacquards and dobbies, and for six years was connected with this plant, which later became known as the Providence branch of the Knowles Loom Works, and still later the Providence Branch of the Crompton & Knowles Loom Works.

He severed his connections with this concern in 1896 to assume the position of Assistant Manager with The A. T. Atherton Machine Company until promoted to his present position.

Since the reorganization, in 1896, the company has enjoyed a large and constantly increasing patronage, and has had the most successful experience in the history of the concern.

From the first their machinery was recognized as being in the front rank, and a certain amount of pride is pardonable in this Company owing to the fact that they have constantly and persistently maintained this position.

Many valuable patented improvements have been added to their machinery from time to time, and the improved work produced was quickly recognized by the trained mill man. The preparatory machinery for cotton, which is the specialty of this firm, has attained a high reputation, owing to its workmanship and the care exercised in designing the parts for the work for which they are intended.

All parts of the machinery are interchangeable, which prevents any inconvenience in case of repairs, and the alignment and mechanical construction are such as to give very light running qualities and years of wear and tear with a minimum of repairs. Their new plant and recent improvements place the company in even a better position today than at any time during its history to serve its customers in the best possible manner, and it will be readily seen from those connected with the concern that its financial standing is of the best.

Their line at present consists of conveying and blowing systems; openers of special types for particular work; automatic cleaning trunk, both inclined and horizontal; breaker, intermediate and finisher lappers of any number of beaters desired; thread extractors; roving waste openers, card and picker waste cleaners, etc.; they also make a specialty of supplying their patented improvements to machines of all makes.

Since the introduction of the English system of revolving flat cards, the evening done by the lappers has become of still greater importance, and their patented evener has been widely adopted. We are informed that during their comparatively brief career they have installed some of their machines in about one-half of the cotton mills in the United States.

Under present conditions they are capable of producing a large output of a superior quality of preparatory machinery.

Its management is in the hands of wide-awake and influential business men and with the high standing of its machinery the prospects are bright for the future.

A Special Mechanical Induced Draft Fan.

In the accompanying engraving is illustrated a special steam driven steel plate fan designed for mechanical induced draft by the Buffalo Forge Company, of Buffalo, N. Y. The construction of this fan presents some interesting features to which we desire to call attention.

The direct connected fan shown herewith is one of two similar pieces of apparatus which together form a duplex induced draft plant installed

in a large electric power plant of northern England. Each fan is capable of handling the gases from four Galloway boilers, each eight feet six inches in diameter and twenty-eight feet long with a grate area of 48 square feet. The capacity of the fans was calculated on a basis of a coal consumption of twenty pounds per square foot of grate surface, using a Durham coal locally known as "Small Bean."

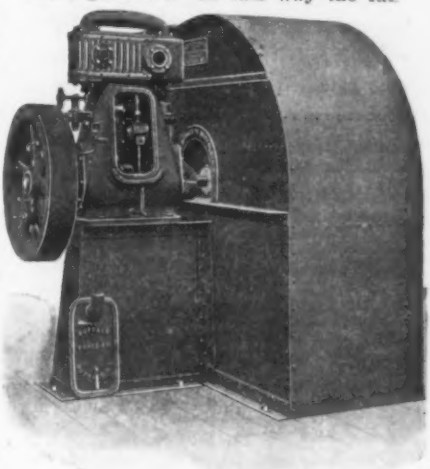
The fans in this plant are one hundred inches in diameter and are driven at a speed of about four hundred revolutions per minute, equivalent to a pressure of two inches of water at the fan outlet. All the gaseous products of combustion from the boilers after passing through the economizer are drawn to the fans, situated on a platform above the boilers, and then discharged upward into the short steel stack.

The fans are of the full housing, up-blast, steel plate construction, rigidly braced with angle irons. The fan wheel is built of steel plate blades bolted to wrought iron spider arms and provided with conical side pieces to lend rigidity to the whole. To insure cool running while handling the hot gases for long periods, the fan wheel shaft is supported in a water cooled bearing; the main bearing of the engine on the side next the fan is likewise provided with a water cooling device.

The blast wheel which it should be mentioned is overhung, is driven by a Buffalo vertical cross compound engine which is supported upon a sheet steel base integral with the fan casing. The engine is designed with cylinders, four and six inches in diameter, with a common stroke of five inches; running non-condensing on a steam pressure of one hundred and thirty pounds per square inch the engine develops seventeen horse power.

The various rotating and reciprocating parts work within the cast iron frame, which, by the addition of a removable side-plate, is rendered oil-tight and dust-proof. The engine is arranged to run in oil, and in this way all the bearing surfaces within the frame are copiously supplied with a lubricant.

The low pressure cylinder is fitted with a slide valve driven from a fixed eccentric on the crank shaft within the bed, and hence its cut off is fixed. Steam distribution in the high pressure cylinder, however, is controlled by a balanced and adjustable piston valve which is itself actuated by the swinging eccentric of a sensitive shaft governor. In this way the fan



is maintained at a uniform speed when serving one or all of the boilers without any alteration in the position of the dampers.

Excellent steam economy is attained for an engine of this size and, by the automatic oiling arrangement, frictional losses are reduced to a minimum. The feature of tightly enclosing the engine will be appreciated when the condition under which the engine operates is recalled. The many advantages resulting from the application of induced draft to the boiler plant cannot be dwelt upon here, but it might be well to mention the marked saving effected by such apparatus in that the lowest grades of fuel may be burned with facility.

DYEING DEPARTMENT

Dye Recipes for February.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16 page pamphlet, in convenient form for preservation. Subscription price for the TEXTILE WORLD with the Dyers' Supplement is $4.

In recipe No. 15, for Autogene Brown B and G. (Sykes & Street, 85 Water Street, New York), which appeared in the January issue of the Textile World and Dyers' Supplement, an error occurred in giving the formula. It should read 3 per cent. Bichromate of Potash or Soda instead of 5 per cent. as stated.

Recipe No. 17.

Red on Cotton Cloth.

Benzo Fast Scarlet 8 B S on 100 lbs. cotton cloth.

Color in a dye bath prepared as follows:

4 lbs. Benzo Fast Scarlet 8 B S.
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)
40 lbs. Glauber's Salt Crystals.
2 lbs. Calcined Soda.

Benzo Fast Scarlet 8 B S belongs to the same class as the well known brands 4 B S and G S. The difference consists in its having a bluish tone; the method of dyeing and the properties are exactly the same as that of the older Benzo Fast Scarlets. Benzo Fast Scarlet 8 B S can be applied on cotton and mixed fabrics exactly in the same way as the older products, and is especially valuable in all branches of cotton dyeing for the production of Turkish Red shades. The color can be discharged with sulphocyanide of tin, and discharges well with lactate of tin (tin crystals do not give good results). When discharged with zinc powder and afterwards exposed to the atmosphere the discharged parts turn yellow.

Recipe No. 18.

Black on Cotton Yarn.

Pluto Black F Extra on 100 lbs. cotton yarn.

Prepare the dye bath with

5 lbs. Pluto Black F Ex.
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)
20 lbs. Glauber's Salt.

Enter at 170° F., bring to a boil and dye at this temperature for one hour.

Pluto Black F. Extra produces a black of a bluish tone, which has great intensity and clearness of shade, and meets all ordinary requirements as to fastness to washing and light.

Recipe No. 19.

Blue on Cotton Yarn.

Chlorantine Blue 2 B on 100 lbs. cotton yarn.

Prepare the dye bath with

3 lbs. Chlorantine Blue 2 B.
(A. Klipstein & Co., 122 Pearl St., New York.)
20 lbs. Common Salt.

Enter at 170° F., bring to a boil and dye at this temperature one hour.

Chlorantine Blue 2 B possesses all the characteristics of direct cotton colors and produces a pleasing shade of blue.

Recipe No. 20.

Yellow on Silk.

Aurophosphine 4 G on 100 lbs. silk.

Prepare the dye bath with

Boiled off liquor if possible.
2 lbs. Aurophosphine 4 G.
(Berlin Aniline Works, 72 Front St., New York.)
3 lbs. Olive Oil Soap.

It is well to add the dyestuffs in several portions rather than at one time and enough acetic acid to make the bath distinctly acid.

Enter at 140° F., bring slowly to a boil and dye at a boiling temperature for one hour, exhausting the bath if possible.

Aurophosphine 4 G produces a bril-

liant and fast shade of golden yellow on silk.

Recipe No. 21.

Yellow on Worsted Yarn.

Acid Yellow A T on 100 lbs. of worsted yarn.

Prepare the dye bath with

3 lbs. Acid Yellow A T
(Cassella Color Co., Ltd., 182 Front St., N. Y.)

4 lbs. Sulphuric Acid.

15 lbs. Glauber's Salt.

Enter yarn at 170° F., and dye at a boil for at least one hour, exhausting the bath if possible.

Acid Yellow A T produces a level shade of yellow possessing excellent fastness.

Recipe No. 22.

Green on Worsted Yarn.

Naphthol Green B on 100 lbs. worsted yarn.

Prepare the dye bath as follows

3 lbs. Naphthol Green B.
(Cassella Color Co., Ltd., 182 Front St., N. Y.)

4 lbs. Sulphuric Acid.

15 lbs. Glauber's Salt.

Enter at 180° F., bring to a boil and dye at a boil for one hour.

Naphthol Green B produces a pleasing shade of moss green, which stands the usual requirements of an acid color.

Recipe No. 23.

Carmine Red on Worsted Yarn.

Azo Carmine Extra on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Azo Carmine Extra.
(New York & Boston Dyewood Co., 55 Beekman St., New York.)

4 lbs. Sulphuric Acid.

15 lbs. Glauber's Salt.

Enter at 170° F., bring to a boil and dye at this temperature for one hour.

Azo Carmine Extra has great equalizing power and great utility for mixing with and toning many other acid colors.

Recipe No. 24.

Brown on Cotton Yarn.

Pyrol Brown G Ex. on 100 lbs. of cotton yarn.

Prepare the dye bath with

Water equal to about 15 times the weight of cotton, and

10 lbs. Pyrol Brown G Ex.
(C. Bischoff & Co., 87-89 Park Place, New York.)

15 lbs. Sodium Sulphide.

10 lbs. Sodium Carbonate.

Dissolve perfectly in the bath then add

35 lbs. of Common Salt.

Enter at 170° F., bring to 195° to 200° F., and dye at this temperature from 3/4 to one hour, working just like any direct cotton color.

Pyrol Brown G Ex. gives a true cutch shade, may be dyed like any direct cotton color, is fast to washing without any after treatment, and is also fast to rubbing, acid, and mercerizing and possesses good fastness to light.

Pyrol Brown also has great affinity for basic coloring matters and may be easily topped with them. In order to avoid unevenness, 2 grams of alum per litre of water should be added to the topping bath.

Recipe No. 25.

Blue on Worsted Yarn.

Fast Blue B on 100 lbs. of worsted yarn.

Prepare the dye bath with

3½ lbs. Fast Blue B.
(United Indigo and Chem. Co., 176 Federal St., Boston.)

3 lbs. Sulphuric Acid.

10 lbs. Glauber's Salt.

Enter at 170° F., bring to a boil and dye at this temperature for one hour, exhausting the bath if possible.

Fast Blue B produces an even and brilliant blue which stands light and fulling very well.

Recipe No. 26.

Black on Worsted Yarn.

Buffalo Chrome Black on 100 lbs. worsted yarn.

Prepare the dye bath with

6 lbs. Buffalo Chrome Black.
(Schoellkopf, Hartford & Hanna Co., 100 William St., New York.)
4 lbs. Sulphuric Acid.
15 lbs. Glauber's Salt.

Enter yarn at 160° F., bring to a boil and dye at this temperature one hour, or until bath is exhausted. Then add

2 lbs. Potassium Dichromate

and boil 1/2 hour longer.

Buffalo Chrome Black gives a very fast and bloomy shade of black.

Recipe No. 27.

Yellow on Worsted Yarn.

Brilliant Yellow 3/0 on 100 lbs. worsted yarn.

Prepare the dye bath with
3 lbs. Brilliant Yellow 3/0.
(F. E. Atteaux & Co., 176 Purchase St., Boston.)
6 lbs. Sulphuric Acid.
15 lbs. Glauber's Salt.

Enter yarn at 170° F., bring to a boil and dye at this temperature one hour.

Brilliant Yellow 3/0 produces shades on wool which are very fast to fulling. The fastness may be increased by dyeing in a chrome mordant.

Recipe No. 28.

Red on Worsted Yarn.

Brilliant Scarlet N 3R on 100 lbs. cotton yarn.

Prepare the dye bath
3 lbs. Brilliant Scarlet N 3R.
(Sykes & Street, 85 Water St., New York.)
4 lbs. Sulphuric Acid.
15 lbs. Glauber's Salt.

Enter at 170°, dye at a boil for one hour, exhausting the bath if possible.

Brilliant Scarlet N 3R possesses high coloring power and produces an excellent shade of red.

Recipe No. 29.

Black on Cotton Yarn.

Pyrol Black N on 100 lbs. of cotton yarn.

Prepare the dye bath with

Water equal to about 15 times the weight of cotton and
15 lbs. Pyrol Black N.
(C. Bischoff & Co., 87-89 Park Place, New York.)
25 lbs. Sodium Sulphide.
10 lbs. Sodium Carbonate.

Dissolve above perfectly in bath by boiling up then add

70 lbs. Common Salt.

Shut off steam, cool a little and add material. Give several turns and sink beneath the surface of the liquor. Dye for one hour at 195° to 200° F., turning every ten minutes. Then pass the goods through a set of squeezing rollers mounted on one end of the dye vat, rinse as quickly as possible and add to the last rinsing vat 5 lbs. of alum or any other aluminum salt.

The dyeings thus obtained are already fairly fast to washing and soaping, but can be rendered more so by after treating for 1/2 hour at 175° to 195° F., in a bath made up as follows:

2 lbs. Potassium Di Chromate.
4 lbs. Alum.
3 lbs. Acetic Acid.

Then rinse well, soap and finish.

Standing kettles require at the most only 1/2 of the original quantity used.

Pyrol Black is dyed in wood tubs fitted with iron steam pipes, copper and tin has to be avoided.

Recipe No. 30.

Red on Cotton Yarn.

Direct Red 10781 on 100 lbs. of cotton yarn.

Prepare the dye bath with
3½ lbs. Direct Red 10781.
(Read, Holliday & Sons, Ltd., 7 Platt St., New York.)
10 lbs. Glauber's Salt.
4 lbs. Soap.

Enter at 180° F., bring to a boil and dye at this temperature.

Direct Red 10781 will be found to produce level and brilliant shades of red.

Recipe No. 31.

Brown on Cotton Yarn.

Autogene Brown G on 100 lbs. of cotton yarn.

Prepare the dye bath with

300 gallons water, and to this add
10 lbs. Sulphide of Sodium.
5 lbs. Soda Ash.
50 lbs. Common Salt.
10 lbs. Autogene Brown G.
(Sykes & Street, 85 Water St., New York.)

For light shades, half of these quantities will be sufficient. Turn at a boil for one hour, or without turning dye at a boil for one hour, keeping the cotton submerged. Lift, squeeze or wring well and wash thoroughly.

If a standing kettle is kept the amount of Autogene Brown may be reduced one-half to one-third, and only five per cent. of Sodium Sulphide, one per cent. to two per cent. of Soda Ash and ten per cent. of Common Salt added for each dyeing.

A standing kettle is practical only for full shades, for with light shades the bath is practically exhausted.

After Treatment:—Shades obtained in the above manner are extremely fast to light, washing, fulling, and do not crock, but they may be slightly improved in these respects by treatment for 15 minutes in a fresh bath at 160° F., with

5 lbs. Bichromate of Potash or Soda.
1½ lbs. Blue Stone.
5 lbs. Acetic Acid.

For light shades one-half these quantities.

Autogene Brown B and G are perfectly soluble and dye evenly. They are adapted to all classes of cotton dyeing, where absolutely fast shades are required. Being of precisely the same characters they work well together. When after treated the shades are made slightly bluer in tone. Copper vessels and fittings should be avoided.

Recipe No. 32.

Black on Worsted Yarn.

Wool Black 4 B W on 100 lbs. worsted yarn.

Prepare the dye bath with
5 lbs. Wool Black 4 B W.
(Berlin Aniline Works, 72 Front St., New York.)
10 lbs. Calcined Glauber's Salt.
5 lbs. Acetic Acid.

Enter at 140° to 160° F., raise to a boil and boil for 1/2 to 3/4 hours, then add

5 lbs. Bisulphate of Soda or
2 lbs. Sulphuric Acid

and continue boiling until bath is exhausted.

Wool Black 4 B W possesses excellent leveling and penetrating properties and beauty of shade which remains unchanged in artificial light, and also has good resistance to acids, alkalies and light.

Hosiery Dyehouse for Three to Four Thousand Dozen Per Day.

The plan shown here is for a hosiery dyehouse, capable of handling from three to four thousand dozen per day. It is made up of two separate rooms, one, the main dyehouse, 100 by 64′, and the other room for the aniline black dyeing, 38 by 64′. These are entirely separate, but are closely connected and convenient to each other so as to do away with unnecessary labor and handling of goods.

In the main dyehouse (which has a dyeing capacity of two thousand dozen stockings per day), the equipment consists of six dyeing machines of the Klauder-Weldon or Delahunty type, and each of the machines has a dye storage tank, placed as shown.

Three of these machines can be used on blacks, which are dyed by the diazotizing and developing method; one machine can be used for dyeing blues, these being dyed in the same manner as blacks, but developed with a different developer, generally beta-naphthol; the other two machines can be used for dark and light tans.

These colors were formerly dyed with the wood colors, such as cutch, fustic, and logwood, and then chromed. By this method good fast tans were obtained, but this way of dyeing was never quite satisfactory as it gave the goods a harsh, hard feel, which required softening to overcome.

Since the advent of direct colors this method has been largely done away with, and now good tans are easily and cheaply colored by using such direct colors as are after chromed. Tans are dyed with such colors as Benzo Chrome Brown G or Diamine Brown B, for one hour, with ten per cent. common salt, and the goods are chromed off in another bath without washing. The stockings dyed in this manner are fast and clean, and have a good soft feel.

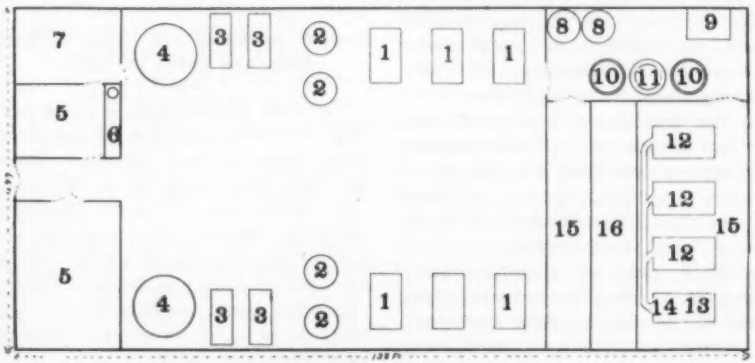
In the main dyehouse there are four yarn dye boxes. These are 10 feet long, 26 inches wide, and 26 inches deep, and are for dyeing fast black yarn for knitting stockings with white feet or fancy colored. Four men can do a thousand lbs. per day in boxes of this size without crowding.

The keirs shown in this plan are the ordinary low pressure kind; they can be made out of wood or iron, and are provided with the usual vomit pipe. They are 8 feet deep; each keir is capable of holding three thousand lbs. at a boil.

The four extractors are self-balancing and of the largest size, and they are provided with copper or galvanized iron baskets to resist the corrosive action of water, alkalies, acids, etc.

The aniline black plant has a dyeing capacity of a thousand dozen per day, when the goods are dyed by the "single run method." Its equipment consists of a blower and coil, three oxidizing cages 7 feet by 12 feet, two five "pounder" tom-toms, one large extractor with copper basket, and cisterns for mixing and storing the standard dye solution, also one large size chroming machine.

In this plan, the dyer's office and laboratory are separate, but convenient to each other. The laboratory contains shelves for samples and apparatus. This apparatus is not a costly one. It consists of a few porcelain lined pots, a thermometer and hydrometer, a good balance, sink and gas stove. In a laboratory fitted in this manner all the needed comparative dye tests can be carried out.



PLAN OF A HOSIERY DYE HOUSE.

1, Dyeing Machine; 2, Hydro-Extractors; 3, Yarn Tubs; 4, Boiling Out Keirs; 5, Laboratory 6, Sink; 7, Office; 8, Solution Tank; 9 Chroming Machine; 10, Tom-toms; 11, Extractor; 12, Oxidizing Cages; 13, Steam Coil; 14, Blower; 15, Alley; 16, Aging Racks.

The dyehouse should be well sewered and ventilated. This ventilation is best done in the winter by fans, using steam coils to dry out the moisture; in the summer, by fans alone or by roof ventilation. Dyehouses should be well ventilated, first, as a matter of comfort to the employees, and also because it pays to do it. In dyehouses where there is improper or little ventilation, the roof or ceiling soon gets rotten, belting wears out sooner, and the drops from the ceiling caused by the condensation of the steam make it hard to keep light colors and bleached goods clean.

ROGER WILLIAMS.

Dyeing Mercerized Cotton.

The dyeing of mercerized cotton is still in course of development. Introduced barely eight years ago, many dyers have not yet had enough experience of it. The following remarks are the result of one set of experiences in Germany, however, and may probably be useful to our readers.

Both the operations in which mercerization consists have their influence on the subsequent dyeing processes. The caustic lye gives the cotton greater affinity for dyes and mordants, which makes it very difficult to dye it in level shades. The spinning of the yarn is of much importance. The best yarn for lustring is a double yarn with not too much twist.

The first point in dyeing mercerized goods is to use those substances which least affect the lustre of the cotton. Alum, so largely employed for ordinary cotton, is one of the worst things that can be used for mercerized goods. In fact, mordants of all kinds should be avoided as far as possible by the use of substantive dyes. These can be got as fast as adjective dyes in many cases. Another extremely important matter is the temperature of the dyebath. It must be kept as low as possible to counteract the great affinity for dye of the mercerized fibre. The necessary temperature varies with the color. For light shades about 90 deg. F. is a fair average. For medium, enter cold and heat to not more than 140 deg. F. For dark colors, enter at about 100 deg. F. and bring very gradually to the boil. The boiling temperature should only be reached just before the goods are lifted. Glauber's salt and other retarders are usually unnecessary, but many dyers think it advisable to use them. The temperature regulation is, however, much more important.

Many dye-makers and dyers have recommended the use of soluble oils. These are no doubt of service, but the good they do is by no means in proportion to the increased expense and trouble which their use involves. Besides, they leave an unpleasant smell on the cotton which it is difficult and costly to remove. The following are the best proportions for the baths:—

Light Shades.—One per cent. of soda and one to two per cent. of sulphoricinoleate of soda. After half an hour add 2 to 5 per cent. of phosphate of soda. Another and much cheaper method is to dye cold with 10 per cent. of soap. Yet another is to make the bath first with 5 per cent. of soap and one per cent. of soda, lift after three-quarters of an hour and add about 5 per cent. of Glauber's salt and 7 to 8 per cent. of table salt. All these methods can be used with any substantive dye.

Medium Shades.—Make the bath with 10 per cent. of soap and 5 per. cent. of Solvay soda, or 5 per cent. soap and 6 per cent. soda.

Dark Shades.—Make the bath with 10 per cent. of Glauber's salt and 5 per cent. of soda, or 20 per cent. Glauber's or table salt, 5 per cent. soap, and 1 per cent. soda.

It is important to note that every trace of acid must be removed after the souring which in the mercerization follows the action of the caustic lye. If this precaution is omitted the shades will be unlevel. Treatment of the dyed cotton with acetic acid improves the feel.

With regard to the various dyes the following remarks will be of service. Sandal-wood on a mordant of tin salt and sulphuric acid gives a splendid dark brownish red. On an iron mordant the shade is very liable to be unlevel. Logwood on an iron and copper mordant, slightly acid with acetic acid, gives fine blacks and blue-blacks, but must be dyed on slowly and at temperatures well below the boil. Indigo gives lively and deep shades when used with care, without injuring either lustre or feel, but the hydrosulphite vat alone must be used. Zinc and lime destroy the lustre. Cochineal upon a triple mordant of alumina, lime, and tin gives a very

fine dark scarlet. Cutch gives strong colors, but the fixing of it with bichromate requires great care and a temperature not above lukewarm. Tartar-emetic and iron salts will not give level shades.

Among basic artificial dyes, some go on to mercerized cotton without a mordant, giving shades very fast to washing. In this category are Methylene Blue, Bismarck Brown, Safranine S, Victoria Blue, Methyl Violet, Rhodoline Violet, and Direct Grey G. Enter cold with about 5 per cent. of acetic acid, work quickly with a slowly rising temperature and fix in a bath of from 1 to 3 per cent. of tannin. Few acid dyes can be used substantively on mercerized cotton, but more, nevertheless, than on ordinary cotton. The best are Croceine Red and Croceine Yellow, and Puree. Substantive dyes are used either with sulphoricinoleate of soda or soap, together with carbonate of soda, Glauber's salt, or table salt. Enter cold and heat slowly to 100 deg. F. for light shades, 140 for medium hues, and to the boil for the darkest. The dyes most to be recommended are Benzopurpurine, Diamine Blue Black B, Diamine Violet N, Thioflavine, Benzo Brown, Diamine Scarlet B, Titan Red and Brown, Primuline, and Diazo Black. The diazotizing and development, and the treatment with chromium and copper are the same as with ordinary cotton. The lustre is not much impaired. Hard water must be softened with acetic acid before use.

Alizarine colors equalize well if the mordant has been well applied. The goods should be entered cold, and the bath should be slightly alkaline with ammonia, which is neutralized with acetic acid during the dyeing. If the shade has to be fixed by long steaming, as with Turkey red for example, the fibre loses all its lustre, especially if the steaming is under pressure.

The sulphur dyes are taken up very well and uniformly by mercerized cotton, and the dyebath should be weaker than with ordinary cotton. The lustre is not at all affected.

Aniline black, especially oxidized blacks, dull the lustre, and give inferior results to Diazo or Sulphur blacks. Rhodamine and related dyes must be dyed in a soap bath, about 10 per cent., at 100 deg. F. It is best to rinse after dyeing, but otherwise 5 per cent. of table salt and 4 to 5 per cent. of soap may be used, instead of the 10 per cent. of soap. When dry the cotton must be well beaten, to free it from soap.—Faerber and Wascher.

White Dyeing and Bluing of Wool.

Fully as important if not more so than the bleaching of wool is the process of white dyeing or bluing. Many kinds of wool, particularly the better qualities, possess a very clear white shade after an ordinary scouring. They have but a slight yellowish shade, which can be removed without resorting to the regular bleaching processes.

The addition of a small quantity of violet or, what is better, reddish violet dyestuff to the fibre neutralizes this yellow shade. Yellow and violet are complementary colors, that is they neutralize each other. A very small quantity of violet is needed on the fibre to neutralize the yellow and the result is a good white. Wool bleached with sulphur requires the addition of a small quantity of reddish blue coloring matter, otherwise the wool will have a yellow shade.

Wool bleached with per oxide seldom requires this so-called white dyeing, as this method of bleaching generally produces a pure white. In case the wool bleached with peroxide is given an after treatment with reddish blue coloring matter, great care must be used, otherwise a blue white will be obtained. It is difficult to apply to the fibre the small quantity of dyestuff necessary in the case of white dyeing. The process resembles the bluing of the laundry, as a high degree of fastness is not required for

this tinting, since the object is to preserve the tinting only until the goods are sold. If the material treated is loose wool which is to be used for mixes, fastness is essential. Bleached goods can be treated either before or after bleaching. The former method is much preferable, as then the shade can be matched to a sample.

Other materials are used for the purpose of covering the yellowish shade of the wool. Among these may be mentioned, white zinc, sulphate of baryta, gypsum, chalk and similar substances that are insoluble in water. Bran and meal are sometimes used, or the goods treated in a bath made up of alum, tin salts, tartar, etc. The purpose of these materials however is generally to make the goods heavier.

The dyestuff most frequently used is ultramarine. The goods are treated in a cold bath in which the ultramarine has previously been dissolved. This can be done in the scouring machine by adding the ultramarine to the scouring water. It gives a very uniform shade and is easily applied. It is, however, the most fugitive of any of the dyestuffs used for this purpose; it will become spotted simply by water dropping upon it.

Following are some of the artificial dyestuffs used for bluing and white dyeing:—Crystal violet; Methylene blue; Rhodamine; Alkali blue; Victoria blue.

Usually these dyes are applied in a soap liquor heated to 30° or 40° C., as the direct application of so small a quantity of dyestuff is apt to cause uneven shades.

If it is desired to avoid the use of soap, natural dyestuffs such as indigo carmine, archil and cyanine are recommended. These give a somewhat faster shade than the methods previously described.

An experienced dyer recommends the following method for white dyeing, which at the same time results in the increase of about 18 per cent. of the weight of the wool. The bath is prepared as follows: 4% alum; 2% tartar; 2% sulphuric acid; ½% indigo carmine; ¼% archil extract. This is heated to 40° C., and the wool immersed and carefully handled for half an hour. Meanwhile a fresh neutral bath consisting of 2% chloride barium is prepared and the wool which has been treated in the first bath is immersed in this second one and boiled for two hours. The sulphuric acid which the wool has absorbed in the first bath precipitates sulphate baryta and consequently the yarn is made quite dusty.

So-called recipes for white dyeing or bluing wool should be used sparingly. We have in this chapter described the practical methods both as to choice of dyestuffs and the preparations to be used. The latter should be regulated of course according to the shade of the wool, and the degree of white desired. Clear blue and greenish blue dyestuffs produce a clear white by daylight, but by artificial light the color appears to be grey. This defect is less marked with reddish blue and violet dyestuffs, which are apt to appear dull grey by daylight and bright and clear by artificial light.

Formerly indigo carmine, and archil extract were exclusively used for white dyeing and bluing. Now preference is given to the many violets and acid violets on the market. These give a much clearer white than could be obtained by the old methods.—Farber Zeitung.

—The exports of wool during the year ending Sept. 30th, 1901, from the Rio de la Plata region is reported at 540,185 bales. Of this quantity 25,127 bales were shipped to the United States, the balance going to Europe. The new clip is reported to be of excellent quality.

—Politeness is a passport in society which virtue needs and with which vice surrounds itself.—Mme. De Stael.

—It is a terrible advantage to have done nothing, but one should not abuse it.—Rivarol.

MILL NEWS.

Cotton.

New Mills.

—Alabama, Anniston. Robert Lucas, formerly with the Woodstock Cotton Mills, and others, are interested in erecting a new cordage plant at this place, for making cord, twine, rope, batting, etc. Options have been taken on three different buildings and the necessary machinery selected. They expect to begin running about the middle of February.

—*Alabama, Demopolis. The Bessie Minge Mfg. Co., which has been incorporated with a capital stock of $100,000, J. H. Minge, president and J. C. Minge treasurer and buyer, expect to start operations about July 1st, making yarns up to No. 8. The mill will be equipped with 3000 spindles. Catlin & Co. will sell the product. Steam is the power to be used.

—*Alabama, Stevenson. The machinery has been received and is being set up in the Broadus Cotton Mills.

—*California, Los Angeles. S. D. Moore, 208 Henne Block, advises us that he has commenced investigations concerning the establishment of a cotton mill, but is first desirous of obtaining the services of some mill man to build and manage the prospective plant. He expects but little trouble in disposing of the stock of the company, which is proposed to be placed at $300,000.

—*Georgia, Dublin. The Dublin Cotton Mills, which are being equipped with 5000 spindles and 160 looms for making fine sheetings, expect to have the plant in operation in about 30 days.

—*Georgia, Waycross. The Waycross Cotton Mill Company has been organized for the purpose of erecting and operating a 5000-spindle mill. Geo. W. Deen has been appointed temporary president; L. Johnson, vice-president; John A. Lott, secretary and treasurer. Among the directors are: Geo. R. Youmans and A. Sessons, previously mentioned as interested in the cotton mill projected here. The capital stock is placed at $50,000.

—*Maine, Richmond. The Kennebec Spinning Co., which is making repairs, etc., to the Richmond Cotton Mills, which they are to operate, are reported as expecting to begin production of yarn, about the middle of February. About 24 new combers will be installed and the mill and part of them will be put in the new addition to be erected between the large mill and one-story building.

—*Massachusetts, Dalton. John P. Crane, formerly with J. L. & T. D. Peck, warp mill, Pittsfield, is to start manufacturing hygienic bath towels and mercerized rugs at this place February 1st. The towel manufacture has been run on a small scale by Thomas Crane, who bought a building some time last summer and added some machinery for that purpose. New machinery is to be added and the plant equipped in a first-class manner.

—*Massachusetts, New Bedford. The new mill to be erected here by the Whitman Mills will be 571 by 104 feet, three stories, with weave shed, as previously reported, 384 by 303 feet, one story, with saw-tooth roof. About 68,000 spindles and 1700 looms will be installed, giving the plant, when completed, a total of 132,000 spindles and 3400 looms in the two mills.

—*Massachusetts, Rockland. The Rockland Webbing Company, recently incorporated with capital stock of $25,000 with Elisha T. Harvell, president; Joseph E. French, treasurer, Geo. A. Woodward, agent and buyer and Harry Woodward, superintendent, will start operations April 1st, 1902. They will make tapes, shoe strapping and non-elastic narrow fabrics, operating 10 looms, with steam power.

—*Massachusetts, Uxbridge. H. E. Sweet, W. E. Worster and W. H. Sweet will start operations about Feb. 15th in the Balcomb Block, making tape and narrow ribbons. They will start with 8 looms. H. E. Sweet, treasurer of the concern, will remain with the Richard Sayles Co., while the plant will be managed by W. H. Sweet. Glidden & Co., Boston, Mass., will sell the product.

—Mississippi, Starkville. The Textile Novelty Manufacturing Company has been recently organized to manufacture fancy cotton goods and will soon begin construction of the plant. They will install only about 25 looms at first. S. Kohorn is president of the concern.

—New Jersey, May's Landing. James W. Shea and F. C. Smith of Philadelphia are reported as having formed a copartnership for manufacturing dress goods, and will begin work in a few weeks.

—*North Carolina, Gastonia. The Loray Mills expect to have about 25,000 spindles (of the full equipment of about 50,000), in operation by March. Cotton is being put through the mill.

—Pennsylvania, Reading. A new concern has been organized for the manufacturing of narrow ribbons, braids and fabrics, as the American Narrow Fabric Co. The company is now considering several sites upon which to erect a large plant early in the spring. E. D. Trexler, Charles K. Derr, John M. Frame, are among those interested in the project.

—Rhode Island, Woonsocket. The Spragueville Mills have been secured by J. F. Dustin, formerly manager of the Woonsocket Corduroy Co., and operations will be started at once making corduroys and velveteens, for men's and ladies' wear, and plushes and corduroys for upholstery. Plant will be operated under name of the J. F. Dustin Mfg. Co.

—South Carolina, Anderson. The Orr Mills Co. is considering project of build-

ing another mill near the present plant, to be known as the Orr No. 2 Mill. The directors propose that this be done and to operate with steam power until electric power becomes available again, upon completion of the Anderson Electric Light & Power Co.'s new dam. They propose having an equipment of about 25,000 spindles.

—*South Carolina, Whitmires. Rapid progress is being made by the Glenn-Lowery Mfg. Co. on the erection of their new mill, which is being built for accommodating 25,000 spindles and 675 looms. The building is 126 by 480 feet, four stories, and is so planned that the capacity may be doubled at a minimum expense. All the modern improvements are being put in, including sprinkler systems, electrical equipments for driving all the machinery, hot blast system, etc.

—*Tennessee, Lawrenceburg. The Eagle Cotton Mills will rebuild their mill recently destroyed by fire, equipping same with 3000 to 4000 spindles.

Enlargements and Improvements.

—Alabama, Anniston. The Woodstock cotton Mills have completed the erection of a large addition to the main building, which gives an additional floor space of 500 square feet, to be used for a packing room. A 400 h. p. boiler is also being installed. They have recently increased the number of spindles in the plant, now operating about 10,000, giving the plant a daily output of 7,000 lbs. of yarn per day.

—*Alabama, Florence. The Ashcroft Cotton Mills, which erected an additional building for purpose of installing additional spindles and looms, increasing the number to 6,000 and 200 respectively, expect to have the machinery running early in January.

—*Arkansas, Monticello. The Anderson Cotton Mills have increased their capital stock from $100,000 to $115,000.

—*Georgia, Macon. The Willingham Cotton Mills, which recently completed the erection of an addition and will install additional spindles and looms (about 4,000 and 100 respectively) have increased the capital stock from $100,000 to $150,000.

—Maine, Castine. Edward H. Carpenter, cotton twines, fish lines, etc., expect to have the new factory, recently built, in operation in February.

—Massachusetts, Fall River. The Stafford Mfg. Co., which has recently completed the erection of a new weave shed, will install a large new engine in the plant of about 600 H. P., with an 18 ft. fly wheel. It is expected that the engine will be placed in position some time in March.

—*Massachusetts, Milford. William Lapworth & Sons have purchased the Electric Storage Battery Co.'s car house, and will remodel some for a weave room.

—*Mississippi, Laurel. The Laurel Cotton Mills have completed the installation of additional machinery in their plant and are now operating 10,000 spindles and 320 looms. They contemplate installing 320 more looms by February and operating the 10,000 spindles night and day to supply the necessary yarn.

—North Carolina, Clayton. At a meeting held recently by the directors of the Clayton Cotton Mills, which have been in operation but a short time, it was decided to enlarge the plant and increase the capacity. A loan of $40,000 (secured by a first mortgage on the plant) was made for the purpose.

—*North Carolina, Concord. Work will start at an early date on construction of the new addition, 3 stories, reported previously to be made to the Gibson Cotton Mill.

—*North Carolina, Huntersville. The Anchor Cotton Mills, recently reported to increase the capital stock, will erect an addition at a cost of about $100,000, in which they will install 400 looms, and double the present capacity of the plant. This is the mill in which J. S. Spencer and C. W. Johnston are interested.

—*Rhode Island, Lonsdale. Work is progressing on the new bleachery and dye house being built for the Lonsdale Co., contract for which was secured by J. W. Bishop Co. The capacity of the old plant will be doubled. When the bleachery building is completed the machinery will be removed from the old plant, which will be torn down. Considerable new machinery will be installed in this building, on account of the increased capacity.

—Rhode Island, Woonsocket. Additional looms numbering about 66 are to be installed in the Social Mill, which is making some other minor improvements to the plant.

—*South Carolina, Lancaster. The Lancaster Cotton Mills, previously reported making arrangements for installing new machinery in their mill, advise us that the equipment will consist of 53,000 spindles, instead of 50,000, as reported, and 1200 looms. This company makes sheetings. They expect this No. 2 mill will begin production about Sept., 1903.

—*Tennessee, Humboldt. The Humbolt Cotton Mills recently reported to increase the capacity of the mill, will install 1260 new spindles, 50 looms, 4 new cards, 3 drawing frames and other machinery in the plant.

—Virginia, Petersburg. The Ettrick Cotton Manufacturing Co., is to expend about $50,000 for enlarging and improving their mill.

Mills Starting Up.

—*North Carolina, Rockingham. The Great Falls Mfg. Co.'s mill, which has been re-organized with capital stock of $100,000, D. L. Gore, president, and Claude Gore treasurer and buyer, will start operations Feb. 1st, making coarse goods. This mill has an equipment of 4524 spindles and 134 looms, and was recently purchased at auction by D. L. Gore.

Mills Shutting Down.

—Maryland, Baltimore. The Woodberry Mfg. Co., operating the Woodberry & Druid Mills, is no longer in business and

expects to discontinue business on March 15th. These mills have gone into the trust.

—New Hampshire, Salem Depot. The Meyers Thread Co.'s plant has been shut down indefinitely.

Woolen.

New Mills.

—*Connecticut, Central Village. The machinery is being placed in the Plainfield Woolen Company's mill and the engine will be started up in a few days. About 80 sets of looms will be started at first, and the number will be increased gradually. Employment will be given to from 200 to 300 operatives.

—*Maine, Springvale. The Springvale Woolen Co.'s plant, recently reported as having been purchased by H. H. Groves, has been started up as the Mousam River Mill, making union goods. J. W. Boocock is associated with Mr. Groves in the plant, which is equipped with two sets of cards and 14 looms and dye house.

—*Maine, Waterville. Frank and Edward Chase inform us that they will erect a new building and repair the old water power building in the spring. They will install two sets of woolen machinery, when completed, and are now in the market for same. The plant will probably be operated as the Chase Woolen Co. Edward Chase's present address is Dexter, Me.

—*Massachusetts, Spencer. The old Red Mill, recently sold to H. C. Leavitt, of New Boston, Conn., is expected to be put in operation in about two weeks. Various improvements and additions are to be made to the plant. The mill will be increased from three sets to four sets cards, and later much other new machinery will be installed. James B. McCann is reported to have charge of the carding department. Isaac Goldberg of Worcester, is also interested in the new enterprise.

—*New Jersey. Changewater. The new mill to be started up here by A. T. Skerry & Co., New York, for making worsted yarns, will be equipped with a dye house and operated by water power. There will be about 16 frames. The English system will be used. As previously reported they expect to begin operations about March 1st.

—*New Jersey, Trenton. F. A. Straus & Co., Chester, Pa., which purchased the Rothschild Shirt Factory, for making worsted yarns, from 3s to 36s, single and two ply, expect to have about one-quarter of the machinery in operation about February 15th. They are equipping the mill with 12 combs and 48 spinning frames. The new building is 300 by 60 feet, 3 stories high.

—*New Mexico, Las Vegas. The Ross & Browne Wool Scouring Co., recently incorporated with capital stock of $20,000, with Thomas Ross, president, E. L. Browne, treasurer, and James Gilet, superintendent, will start operations about May 1st.

—*Oregon, Eugene. The Wallamette Valley Woolen Mfg. Co., which has been incorporated with a capital stock of $60,000, will start operations about May 30th, making cloth, blankets, etc., and will employ from 50 to 75 people. The mill will have a dyehouse attached and will be operated by water power.

—Pennsylvania, Philadelphia. Taylor, Noone & Co. is the name of a new concern which has recently established a shoddy plant at 4434-4438 Penn St., Frankford. John Noone is general manager of the plant.

—*Pennsylvania, Philadelphia. David A. Stroud, proprietor of the Enterprise Mills, recently reported as building a new factory at the northeast corner of Marshall and Juniata Sts., expects to have same in operation about June, and it will be equipped with 80 looms for making rugs, etc.

—*Pennsylvania, Philadelphia. The Abbott Manufacturing Company, reported incorporated at Camden, N. J., is now getting out a line of samples in the Lincoln Worsted Mills, Philadelphia. They expect to locate in this city. Company has capital stock of $200,000. Frederick C. Brunhouse is president; Chas. A. Fessler, secretary and treasurer, and Geo. Sidebottom, superintendent and buyer. Mill will have an equipment of 4 sets cards, 4 combs (Bradford system) and 40 looms, for making men's and women's wear, using worsted yarns, 2/20 to 2/50. Goods will be sold direct.

—*Rhode Island, Harrisville. We learn that the Royal Worsted Mills recently reported incorporated here, with a capital stock of $80,000, by William Loebel and W. and E. W. Tinkham, is a separate concern from the Wm. Tinkham Co. Details later.

—Rhode Island, Peace Dale. A small mill has recently been erected here and will be started up shortly by Edward and John Doane, making worsteds. They will operate seven looms.

—*Texas, Weatherford. The Ajax Textile Company has recently been incorporated with capital stock of $50,000 to manufacture woolens. G. M. Bowie is president of the company, F. H. Foat, vice-president, C. D. Hartnett, secretary and treasurer and A. F. Parker, general manager. They will start work at once on building, and expect to have the plant ready to begin operations about May 1st, 1902.

Enlargements and Improvements.

—*Alabama, Anniston. The machinery has been installed in the addition recently built for the Anniston Carpet Co.

—California, Marysville. The Marysville Woolen Mill has increased the capacity of the plant by installing additional looms, giving them a total of 40 when done.

—*Connecticut, South Coventry. E. A. Tracy of this place and T. P. Flaherty have purchased the Kenyon Mill property and will utilize part of same for manufacturing wool extracts. The woolen machinery has been sold off.

—Georgia, Rossville. The Parks Woolen Mill has recently installed two new mules and ten looms. The mill has been stopped for a few days, but is now running in full.

Maine, Dexter. Walter Scott & Co., have purchased 13 more looms, which will be installed in the plant, giving a total of 48 when done. A new 240 spindle mule and napper is also being added.

—Maine, Skowhegan. The Marston Worsted Company, which has leased the Lakeside Worsted Mills, will install 12 new high speed looms in the mill. They have recently completed erection of a new dye house at the Madison plant.

—Massachusetts, Lawrence. Walworth Bros., manufacturers of worsted dress goods, have installed 12 additional looms in the plant, and are now operating a total of 72.

—Massachusetts, Lawrence. Geo. E. Kunhardt, manufacturer woolen and worsted goods, has leased the building formerly occupied by the Hartley Wool Scouring plant.

—Massachusetts, Medway. Cole, Senior & Co. will soon start work on the erection of a 2-story building, in which several new looms will be installed.

—Massachusetts, South Groveland. Veasey & Hale, manufacturers of dress goods and flannels, have recently built an addition 52 by 62 feet, two stories, to the No. 3 mill, and will equip the second story for weaving and the first story for finishing.

—Massachusetts, Worcester. The Edgeworth Mills are adding 3 additional sets of 60-inch cards to their equipment.

—*New York, Amsterdam. The Smyrna Rug Mfg. Co., of McCleary, Wallin and Crouse, recently incorporated with capital stock of $5,000,000, have admitted W. & J. Sloane, selling agents for the above named firm, into partnership. This plant is to be doubled.

—New York, Candor. The Candor Blanket Co. will rebuild the dye and dry house, erecting two new buildings, about 60x16 ft.

—New York, Schaghticoke. The Schaghticoke Mills Co. has leased a small plant at Stillwater, in which they will operate a carding and spinning department, to meet the increased demand of business.

—Ohio, Cleveland. The Beckman Company, operating the Northern Ohio Blanket Mills, making bed and horse blankets, have added 15 additional looms to the plant, giving them a total of 115 when placed in position.

—Pennsylvania, Philadelphia. The Caledonia Carpet Mill is installing more worsted and twisting machinery.

—Pennsylvania, Philadelphia. Estimates are now being received by Stearns and Castor, architects, for the contracts for the woolen mill to be erected for Thomas Davis & Sons, Horrocks and Orthodox Streets, Frankford. The new building is to be 80 by 200 feet, four stories high, and will be of fireproof brick construction.

—Rhode Island, Centredale. The Centredale Worsted Mills are adding two additional sets of cards.

—Rhode Island, Peace Dale. The Peace Dale Mfg. Co. is erecting an addition, 156 x25 feet to the mill, in which they will install about 50 more looms. They are also replacing some of the old looms with new ones, and have changed about 40 so far.

—*Tennessee, Knoxville. The Knoxville Woolen Mills inform us that they are adding but 90 additional looms to the plant, instead of about 118.

—*Vermont, Winooski. New machinery has been ordered and is being installed in the mills recently purchased here by the American Woolen Co. Extensive repairs, etc., are being made. About 300 new looms have been ordered. The Colchester Mill, formerly operated as a cotton mill, is being converted into a wool carding and spinning department, while the worsted mill is to be operated as a woolen weaving plant. A small force of operatives have already started work.

Mills Starting Up.

—*Connecticut, Killingly. Operations have been resumed on full time at the Dayville Woolen Co.'s mill recently reported in financial difficulties. Wm. P. Kelley is trustee of the property.

—*Maine, Wilton. Operations have been started up somewhat in F. G. Goodspeed's new mill, which will soon be in full running order.

—*Massachusetts, Lowell. The Merrimack Woolen Mills at Dracut, which were purchased at auction some weeks ago by Michael Collins, are soon to be started up on the manufacture of beavers, kerseys, etc. It has transpired that Mr. Collins acted for C. A. Robinson, treasurer of the Robinson Mills, South Windham, Me., and E. G. Morrison, treasurer of the Elm Mills Woolen Co. at Tilton, N. H., and others, who are to form new company.

Knit.

New Mills.

—Alabama, Sylacauga. The Alabama Mills have been incorporated with a capital stock of $50,000, with J. E. Pearson, president. They have completed installation of the machinery (50 knitting machines) and started making cotton hosiery.

—*Massachusetts, Shelburne Falls. The branch mill established here by D. E. Farley, Orange, Mass., has been started up with about 20 machines, which will all be put in operation as soon as possible.

—Michigan, Owosso. A branch factory for manufacturing Wakeman knit boots will be established here by C. E. Wakeman of Pontiac.

—*New York, Hoosick Falls. Meeker Knit Goods Company is the name of a new concern recently established by County Clerk Riley, and John H. Meeker,

formerly of Langsingburg to manufacture balbriggan underwear. The building formerly occupied by the Superior Knitting Company is being fitted up with the necessary machinery. The company, which has a capital stock of $15,000 of which $10,000 has been paid in, will begin operations in a short time, furnishing employment for about 60 people.

—*New York, Valatie. Operations are expected to start in about two weeks in the knitting department of the Valatie Cotton Mill. Men's ribbed underwear will be made. Plant will have an equipment of 30 knitting machines. Goods will also be dyed.

—*Ohio, Roscoe. The knitting plant started here by Thomas LeRetilley, as the Roscoe Knitting Company, will make men's woolen socks. Plant will have output of about 200 dozen per day.

—Ohio, Wapakoneta. The Wapak Knitting Co., which started operations last November, making men's and ladies' underwear, are in the market for small necessaries in the mill. John S. Brockert is superintendent of the plant, which uses gas. Goods are sold direct and through John H. Conover.

—Pennsylvania, Berwick. Plans are being prepared for the erection for a brick building 80 by 40 feet, three stories in height, to be erected for Thomas West of Danville, Pa. Work will be commenced on the building in the spring, and when completed employment will be given to about 50 hands, which will be increased according to business.

—*Pennsylvania, Bradford. Plans and specifications are being prepared for the erection of a new knitting mill to be established at this place by Joseph T. Stead, represented by W. S. Calhoun. The Board of Trade was actively interested in securing the enterprise.

—Pennsylvania, Philadelphia. W. K. Nixon, formerly with the Friedberger Manufacturing Company has started up a new plant, in quarters leased at 2421 Waterloo Street, and will soon start operations making high grade lisle and mercerized underwear. Plant will be equipped with about 20 knitting machines and 30 sewing machines.

—Pennsylvania, Philadelphia. David Block has started up a knitting plant as the United States Knitting Mills, at N. W. corner 4th and Market Streets, making sweaters, bathing suits, athletic goods and bicycle hose.

—Pennsylvania, Wilkesbarre. The new hosiery mill of the Wilkesbarre Knitting Mills Co. is expected to be put in operation this week. Jesse T. Morgan and Wm. Menzies are reported interested in the plant, which will make all kinds of hosiery, operating 200 machines. Plant has a dyehouse attached.

—*Tennessee, Athens. R. J. Fisher, reported as having purchased a building to be equipped with knitting machinery expects to have the plant ready to start operations about April 1st, 1902. He will make misses' and children's ribbed hose, running from 96 to 128 needles, and will start with 30 knitting machines and 32 ribbers. Steam will be power used.

—*Texas, San Antonio. The Texas Hosiery Manufacturing Company, which started operations October 1st, making men's half hose, with eight machines, are installing additional ones, to increase the number to 50. H. H. Hoffman, is president and buyer of the concern, and F. D. Kammann, superintendent. The product of the mill, which is equipped with a dye house and operated by steam, is sold direct.

—*Wisconsin, Two Rivers. The Two Rivers Knitting Mill has begun operations in their new plant. The machinery has not yet been installed. Sweaters, skirts, hosiery, etc., are made.

Enlargements and Improvements.

—Connecticut, Addison. The Glastonbury Knitting Co., making underwear, has added 2 sets of 48-inch cards to the plant at this place.

—Georgia, Barnesville. Work will be strted at once by the Georgia Underwear Company to put in a bleachery in the plant.

—Georgia, Union Point. The Union Manufacturing Co. is to install a bleachery in the mill for bleaching hosiery, underwear and yarn.

—Illinois, Rockford. The Burson Knitting Co. have increased their capital stock from $150,000 to $500,000.

—Iowa, Des Moines. The Des Moines Hosiery Mills, making seamless hosiery, have placed an order with the Mayo Knitting Machine Co. for 20 additional Acme knitting machines. This addition will give them a daily capacity of 600 dozen. They now have a total floor space of 32,400 square feet.

—*New York, Warsaw. The Warsaw Knitting Mills have nearly completed repairs to their plant recently damaged by fire and are running most of the machines.

—*North Carolina, Enfield. The Enfield Knitting Mills, previously reported making additions to their machinery equipment, will install 21 new knitting machines. They also contemplate putting in a dye plant about Feb. 15th or March 1st. This concern makes misses' and children's ribbed hose.

—North Carolina, Tryon. The Tryon Hosiery Company, making men's, ladies' and children's seamless hosiery, is to expend about $10,000 on improvements to be made. An addition will be built, in which a number of new machines will be installed.

—*Pennsylvania, Orwigsburg. N. H. Moyer, formerly at Boyertown, has removed his plant to a new building recently erected here. The plant, which is known as the Franklin Knitting Mills, Moyer & Heisler, proprietors, makes ladies cotton undervests and has 12 knitting machines. About 12 new machines, increasing the number to 24, will be installed.

—Pennsylvania, Reading. James Loose, C. Landau and J. Miller, operating small mills having their plants in the building recently purchased by the Hampden

Knitting Co., have decided to erect a large building in another location in which their separate plants will be installed. They do not propose to enter into partnership, but will erect the building together.

—South Carolina, Landrum. The Blue Ridge Hosiery Company contemplates increasing the capacity of the plant by installing new machinery.

Mills Starting Up.

—*New York, Cohoes. The Tivoli Knitting Mills, which have been shut down for several weeks, will resume operations February 3d.

Silk.

New Mills.

—Connecticut, New London. It is reported that Alexander Miller of the Portland Silk Co., Middletown, Conn., has been looking at the mill property of the New London Steam Woolen Mills, in reference to establishing a branch mill. Only winding and warping will be done at first.

—*New York, Gloversville. The Fulton County Silk Mills, recently established here by A. Crouse, George Holmes and Wm. Holmes, have an equipment of three looms and three knitting machines for making silk gloves and silk linings for leather gloves. George Holmes is agent and superintendent of the plant, which is operated by steam. The goods are sold direct. They use 14/16 silk tram and 20/22 raw yarn.

—Ohio, Cleveland. The American Silk Co. has been incorporated for manufacturing goods made from cotton fibre, the result of a recent invention of Adolph Greiner, of Warren, Ohio. George Comley is president, Herman Baehr, vice-president; Henry Hertel, secretary and treasurer. They will occupy a two-story building on Pennington Street.

—*Pennsylvania, Duryea. Operations have been started in the new silk mill established at this place. The equipment consists of 16 looms, of which 10 are in operation, making tie silks.

—Pennsylvania, Philadelphia. B. A. Rheinstrom has leased space in the building at 176 West York Street, and expects to have about 25 braiding machines in operation soon, making mercerized and silk braids.

—*Pennsylvania, Stroudsburg. The brick mill leased by Valentine Bliss of Scranton, Pa., for a throwing plant, has been put in operation.

Enlargements and Improvements.

—Connecticut, Mansfield. O. S. Chaffee & Son have reorganized and incorporated their plant as the Chaffee Manufacturing Company. They have leased a building at Palmertown recently occupied by the Linstrom bicycle works and will remove to same, where a general line of silk goods will be made.

—*Connecticut, Mystic. The Mystic Industrial Co. has decided to increase their capital stock on account of the Rossie Velvet Co.'s proposition for an addition to the plant, and are now issuing additional stock.

—*Delaware, Dover. The Post & Sheldon Silk Co., which recently purchased the building in which the plant is quartered, will enlarge the capacity by adding 48 more new looms, having recently put in 10 new ones.

—*Massachusetts, Holyoke. Work is nearing completion on the remodelling of the Skinner Mfg. Co.'s plant previously reported to be made. They will install 50 additional looms in the mill.

—Pennsylvania, Allentown. The Adelaide Silk Mills will erect another addition to its west end mill B 50 by 120 feet and three stories high. The plans have been prepared by Jacoby, Weishampel & Biggin. The basements under Mill B and the one extending along Race Street will be vacated and all the machinery removed to the new addition. This will prevent any further trouble caused by floods.

—*Pennsylvania, Emaus. The contract has been let for the erection of an addition to the Emaus Silk Mill, in which about 80 more looms will be installed when completed.

—Pennsylvania, Pottstown. The Champion Silk Co. has purchased additional property, and will increase the manufacturing plant.

Miscellaneous.

New Mills.

—*Iowa, Dubuque. The Bestoval Mill, which will start operations about January 25th making seamless grain bags, will have an equipment of 10 looms, 432 flax spindles. This is the concern of which L. W. Johnson is manager and A. T. Verrier, superintendent. They will sell their production direct. Steam power is to be used.

—Massachusetts, Methuen. C. A. Johnson, formerly with the Methuen Cotton Mill, as overseer of the dyeing department, has established a new plant here to be known as the Spicket Falls Bleach & Dye Works, dyeing worsted yarns, short skeins, raw stock, etc.

—New Jersey, Newark. The Carl Paas Co. is a new concern recently put in operation at this place. The plant is located at 8 to 14 Lum Street, rear 251 New Jersey R. R. Ave., and manufacture cotton and silk shoe laces. Hughes Fawcett is president and John Cathcart, secretary and treasurer of the company, which is capitalized at $20,000 paid in.

—*Pennsylvania, Williamsport. A large silk dyeing establishment is to be erected here by John N. Stearns & Co., manufacturers of silks and serges. $140,000 has been subscribed by the citizens for the enterprise.

—*Rhode Island, Woonsocket. Mark Hough, proprietor of the Enterprise Dye Works, expects to have the new plant, under construction, ready for occupancy February 1st. The new building is 100 by 55 feet, one story, with boiler house, 35 by 30 feet. Another story will be added

to the main building later. A 100 H. P. boiler and 50 H. P. engine has been installed.

—Tennessee, Memphis. J. C. Kretzschmar, recently reported having bought the Memphis Lint Co.'s plant, expects to start operations February 1st, 1902, making cotton batting, comforts, absorbent cotton and medicated gauze. The plant will be operated by steam. He is in the market for a complete outfit of batting machinery for 12-inch rolls by 90-inch comfort stock.

Enlargements and Improvements.

—Pennsylvania, Philadelphia. The Mascher Street Dyeing & Finishing Works, M. Morganstine, proprietor, have been sold by the sheriff, to the Manchester Finishing Works, Jasper & Huntingdon Streets, who will make an addition of three stories to the building and then remove their plant there. The latest improved dyeing and finishing machinery will be installed.

—*Pennsylvania, Philadelphia. S. Pendlebury & Son, previously reported erecting a new mill, expect to have machinery in same, running next week.

Fires.

—New Jersey, Paterson. Zachariah Cole's plant, located in the Hamilton Mill, has been damaged by fire, and loss is estimated at about $1500, fully covered by insurance.

—New York Harrison. The Moose Head Silk Co.'s mill was totally destroyed by fire on a recent date. Loss on building, machinery and stock is estimated at about $60,000.

—New York, New York. The Manhattan Cloth Examining, Sponging & Refinishing Co.'s Works have been destroyed by fire recently. The loss is placed at $30,000.

—New York, North Hoosick. John H. Meeker's Knitting mill, which was started here last July, making mens' balbriggan underwear was totally destroyed by fire in December.

—Tennessee, Lawrenceburg. The Eagle Cotton Mills, W. H. Dustin, proprietor, have been destroyed by fire, with a loss of about $35,000, covered with an insurance of $12,600. It is thought that the plant will be rebuilt.

Failures and Suspensions.

—Pennsylvania, Philadelphia. Geo. Watkinson & Co., manufacturers of rubber and felt boots, are in financial difficulties. The liabilities are estimated at about $1,000,000 with assets of $1,400,000. Bankruptcy papers will probably be filed shortly.

Facts and Gossip.

—Alabama, Asheville. A $200,000 cotton mill is projected at this place.

—*Alabama, Birmingham. Garratt, Underwood & Ulach, attorneys at law, have charge of the Birmingham Cotton Mill Co.'s plant, which is for sale, and was recently reported bought by the Delaware Co. National Bank of Chester, Pa.

—Connecticut, Central Village. A New York concern has leased Thos. Sheldon's lamp wick manufactory, and will transfer the machinery of their plant to this place. Samuel Collins is manager of this plant.

—Georgia, Barnesville. The Hanson-Crawley Co., have made an assignment. It was closely connected with the Barnesville Mfg. Co., previously reported assigned and subsequently to be reorganized.

—Georgia, Cedartown. The Cedartown Knitting Co. has recently been incorporated with a capital stock of $50,000 with privilege of increasing to $300,000 by Paul D. Baugh, W. E. Stokes, Charles Adamson and others. This concern has absorbed the Josephine and Wahneta Knitting Mills. All the machinery for making ladies' underwear in the Wahneta Mill has been removed to the Josephine Mill greatly increasing the production of that plant. It is thought that the Wahneta Mill will soon be started up again, by installation of new machinery for making hosiery or men's underwear.

—*Georgia, Lawrenceville. The Gwinnett Cotton Mills, previously reported to be sold, have been purchased by T. J. Neacy, representing the Fiber-Stowell Manufacturing Company, for $60,500. It is thought that Mr. Neacy will operate the plant after doubling the present capacity. A. E. McDonald of Cedartown and L. O. Benton, Monticello, and E. C. Calloway, Atlanta, Ga., were among the bidders.

—*Georgia, Millen. T. I. Hickman has been appointed as co-receiver with John R. L. Smith, of the Millen Cotton Mills. They will investigate the mill situation and advise the court whether or not the plant can be operated to pay off the indebtedness. A decision will be rendered Feb. 12th. The cost of the plant was about $162,000. The company owes about $96,000, including bonds.

—*Georgia, Warrenton. The B. L. Battle Mfg. Co., whose plant has been recently destroyed by fire, has not yet made any positive decision concerning rebuilding of the plant, but in all probability will do so.

—Maine, Ellsworth. Horace Bonsey is reported as being interested in starting up a knitting mill in the Fox building.

—Massachusetts, Fall River. It is understood that the controlling interest in the stock of the Barnaby Manufacturing Co. has been purchased in the interest of J. B. Harley, manager of the American Printing Co. Mr. Harley will doubtless maintain his present position as manager of the printing works and Fall River Iron Works, and it is expected that the direct management will probably devolve upon his son, who has received a technical and mill training.

—Massachusetts, Lawrence. Hollings & Smith, manufacturing dress goods at Windham, N. H., will remove their plant to building formerly occupied by Tower, Wing & Co. as a shoddy mill.

—*Massachusetts, Medford. The Medford Woolen Mfg. Co., recently reported incorporated with capital stock of $50,000, has bought the mill of the Medford Mfg. Co., and will continue manufacturing felt boots. Geo. C. Wetmore is treasurer.

—*Massachusetts, Whitman. It is reported that the American Linen Fibre Company, of which J. A. Burleigh is manager, has made an assignment to Benjamin F. Bates, Boston. A statement of the assets and liabilities has not yet been made out. This is the concern which purchased a building here for the purpose of manufacturing flax waste into absorbent linen stock and other specialties by a special process.

—*Mississippi, Vicksburg. The Burnett & McKee Company has been organized with a capital stock of $60,000, for manufacturing cotton and to conduct a mercantile business. This probably has some reference to the report a few months ago that a project was on foot for organizing a company to build a cotton mill.

—*Missouri, Carthage. Maj. Harrington and S. B. Griswold are making efforts to organize a company to operate the Carthage Woolen Mill and also enlarge the same by adding a cutting and clothing department. It is not known how the project will succeed.

—Nebraska, Omaha. The Bemis Bag Company will soon start work on the erection of a new building, 66x132 feet, six stories high for manufacturing bags and horse blankets. A new power plant will be installed in the building. They will also enlarge the capacity of other buildings, adding two stories to one.

—New Hampshire, Tilton. O. & E. Morrison are reported as to discontinue manufacturing shoddy, and will confine their attention to the manufacture of woolens.

—New Jersey, Jamesburg. Efforts are being made to have Westerhoff & Napier locate a mill at this place. The above parties propose investing $30,000 in the project, if the people subscribe $10,000. A Board of Trustees, with J. M. Perrine, secretary, Chas. Breckwedel, treasurer, and F. L. Buckelew, president, has been elected to take further charge of the matter.

—*New Jersey, Vineland. The Daggett factory and the adjoining property has been purchased by M. Munson Searing of the Singleton Silk Mfg. Co. of Dover, N. J., and will be remodelled for a silk mill if the company is exempted from taxes, with the exception of the county and State taxes, for the period of five years.

—New York, Binghamton. The Binghamton Felting Co. has installed two additional 48-inch breaker cards, with other machinery, in the plant, greatly increasing the capacity.

—New York, Cohoes. The Barnet & Aufsesser Knitting Co. has been incorporated with a capital stock of $50,000, by Gates Barnet, Ferdinand Aufsesser, Moses F. Aufsesser, J. A. Leggett and others, to manufacture knit goods.

—New York, Fort Plain. The Fort Plain Knitting Co. has been incorporated with a capital stock of $100,000, by Daniel I. Devoe, Frank W. Bauder, John H. Sanderson, Garrett E. Blauvelt and Andrew L. Gross. This company will operate the plant of which Daniel I. Devoe was formerly proprietor.

—New York, Little Falls. The Victor Adams Mfg. Co. has been incorporated with a capital stock of $50,000 to operate a mill of which Victor Adams was formerly the proprietor. The directors are: Victor Adams, Victor Adams, Jr., Bertram F. Adams, F. Morgan and L. N. Lynt. The latter are two New York men.

—North Carolina, Gastonia. J. A. Smith (Gastonia) and H. D. Wheat (Gaffney, S. C.) with others, are reported as interested in building a dye, bleach and print works at this place. The company is to have capital stock of $200,000.

—North Carolina, North Brook. Beam Bros. of the Indian Creek Lumber Works contemplate building a hosiery mill at an early date.

—North Carolina, Scotland Neck. The Crescent Hosiery Company has been chartered to operate the plant of the Lockland Mills, manufacturing seamless ribbed hosiery. Improvements will be made to the plant.

—*North Carolina, Scotland Neck. Gustav Reichelt is now associated with E. Shields in the Shields Knitting Mill.

—*North Carolina, Shelby. John E. Hurst, Baltimore, previously reported as having purchased the Lauraglenn Cotton Mills, informs us that he does not expect to run it himself, but that some parties in Shelby are now arranging to take it up.

—*North Carolina, Tarboro. John F. Shackelford, proprietor of the Riverview Knitting Mills, burned Dec. 12th, advises us that he has not yet decided to rebuild, although it is quite likely that the mill may be started up again by a stock company. Nothing will be done this winter on any construction.

—Ontario, Galt. The Galt Carpet Company has been incorporated with a capital stock of $40,000 by H. H. Burrows, F. A. Cull and P. F. Pitch.

—Ontario, Hamilton. The Chipman-Holton Knitting Company has been incorporated with capital stock of $150,000.

—Pennsylvania, Bradford. The Board of Trade is negotiating with Joseph Stead to locate a knitting factory at this place.

—Pennsylvania, Oak Grove. John Rich & Bros., operating the woolen mill at Woolrich, contemplate building a knitting plant at this place.

—Pennsylvania, Philadelphia. The Novelty Knitting Mills, formerly operated by Isaac Feld and David Block, are now operated by Isaac Feld and Harry Bachrach, as Feld & Co., Ltd., the former partnership having been dissolved and Mr. Bachrach securing an interest.

PERSONAL RECORD.

Cotton.

—L. E. Anderson has accepted the superintendency of the Eufaula Cotton Mills, Eufaula, Ala.

—A. E. Bosworth, after four years' service as overseer of carding at Ashton, R. I., has closed his labors there, to accept the position of superintendent of the Bernon Mills, Georgiaville, R. I.

—N. T. Brown, until recently the superintendent of the Pilot Cotton Mill at Raleigh, N. C., now fills the same position at the Nantucket Mills, Spray, N. C.

—Joseph Brierley, late of the May's Landing Water Power Co., May's Landing, N. J., has accepted the position of superintendent for W. C. Plunkett & Sons, Adams, Mass.

—Albert E. Brown has resigned his position with the Nashawannuck Co., Easthampton, Mass., where he has been one of the overseers in the weaving department for a number of years. Mr. Brown will be traveling salesman in the piano department for the Taylor music house of Springfield.

—Charles R. Bragdon, late of Somersworth, N. H., has assumed the duties of assistant superintendent of the mills of the Social Mfg. Co., Woonsocket, R. I.

—A. D. Bain has returned to his old position as superintendent of the Delgado Mills, Wilmington, N. C. He has recently been at Greensboro, N. C.

—Thomas Brindle has resigned his position as superintendent of the Victory Webbing Co., North Abington, Mass., to go with the Brindle Steere Co., Providence, R. I.

—E. J. Berry, boss weaver, has changed from the Massachusetts Co. to the Pemberton Co., Lawrence. His help presented him with a gold watch upon his taking leave.

—J. W. Chadwick has accepted the superintendency of the Knoxville Cotton Mills, Knoxville, Tenn. He was formerly superintendent of the Richsboro Cotton Mill, Richsboro, N. C.

—W. H. Cotton, formerly employed in the Acushnet Mills, New Bedford, Mass., has been appointed overseer of weaving for the Barnaby Manufacturing Co., Fall River.

—E. H. Clifford has been promoted to overseer of weaving with the Whitney Manufacturing Co., Lynchburg, Va., vice William Hinchliffe, resigned.

—William J. Cole, formerly of Whitinsville, but later assistant superintendent at the Saunders Cotton Mills, Saundersville, Mass., has accepted the position of superintendent at the B. & R. Knight mill at Manchaug, Mass.

—J. J. Connell, late of the Cohannet Mills, Taunton, Mass., has accepted the superintendency of the Richmond Spinning Co., Chattanooga, Tenn.

—Fred Dick has severed his connection with the Saratoga Victory Mfg. Co., Victory Mills, N. Y.

—Edgar Emerson has succeeded the late David N. Savory as agent of the Slatersville (R. I.) Finishing Company.

—J. T. Fortune has accepted the superintendency of the Cliffside Cotton Mill, Cliffside, N. C.

—Frederick A. Flather, assistant superintendent of the Lowell Machine Shop, Lowell, Mass., has tendered his resignation to the Board of Directors, after ten years of service in the Lowell Machine Shops. Mr. Flather has been appointed general staff officer, or managing superintendent of the plant of the McCormick Harvesting Machine Co., Chicago, Ill.

—Lloyd A. Gilbert has been promoted to the position of overseer of carding for the Blackstone (Mass.) Mfg. Co. He succeeds E. W. Mongeon, who has accepted a similar position with the Ashton (R. I.) Mills.

—H. L. Gobell, late overseer of spinning with the Bennettsville (S. C.) Cotton Mills, is at present filling the position of overseer of spinning at the Columbia Mills, Columbia, S. C.

—H. H. Graddick is now employed by the Fulton Bag & Cotton Mills, Atlanta, Ga.

—James A. Greer, overseer of carding at the Mandeville Cotton Mills, Carrollton, Ga., has resigned to take charge of the Birmingham Cotton Mills at Birmingham, Ala.

—John Hume, late of Taunton, Mass., has accepted charge of spinning, spooling and slashing at the Massachusetts Reformatory, Concord Junction, Mass.

—B. F. Houston of Fayetteville, Tenn., has been engaged to take charge of the new Chronicle Cotton Mills, Belmont, N. C.

—James Hicks has returned to his old position as chief engineer of the Hogansville Cotton Mills, Hogansville, Ga.

—M. D. Harris, late overseer of carding at the Florence Mills, Forest City, N. C., is now filling a similar position with the Erwin Cotton Mills, West Durham, N. C.

—W. D. Hughes has been appointed overseer of carding at the Meridian Cotton Mills, Meridian, Miss.

—W. P. Hornbuckle, formerly of Concord, N. C., and more recently of Lynchburg, Va., now fills the position of superintendent of the Pilot Cotton Mills, Raleigh, N. C.

—Charles Herring is now overseer of spinning for the Gibson Mills, Concord, N. C. He was formerly with the Bibb Manufacturing Co., Macon, Ga.

—Hatton Langshaw has concluded his duties with the Pemberton Co., Law-

rence, Mass., as overseer of weaving. Mr. Langshaw had been connected with the Pemberton and Methuen Co.'s mills for the past six or eight years as overseer of weaving. Prior to the time Agent Barnes assumed charge of the Pemberton Mills, Mr. Langshaw was located at the Methuen Mills. Later he was transferred to the Pemberton Mills. Upon his retiring he was presented with a fine pipe.

—A. B. Mole, who has been manager of the Greylock Cotton Mills at North Adams, and The W. C. Plunkett & Sons' yarn mills, has been appointed general manager of the Dominion Cotton Mill Company, Montreal, Canada. Mr. Mole has a thorough knowledge and experience in cotton manufacturing.

—Dennis F. McElroy, foreman for 25 years of the Dunnell Branch (U. S. Finishing Co.) Pawtucket, R. I., and more recently similarly employed at Clear Water Bleaching & Manufacturing Company, Augusta, Ga., is now with the Allen Print Works, Providence, R. I.

—Mr. Meikle, overseer of the fancy weaving department of the Barnaby Mills, Fall River, Mass., has severed his connection with the concern.

—Z. T. McKinney, owing to poor health, has resigned the superintendency of the Tryon Mfg. Co., Tryon Factory, Ga.

—J. S. Oswalt, formerly overseer of weaving at the Nantucket Mills, Spray, N. C., is now employed by the Eagle & Phenix Mills, Columbus, Ga.

—L. M. Odell has been appointed superintendent of the Lippard Cotton Mill, Concord, N. C.

—J. P. Pomeroy, having sold his interest in the Riverdale Mills, Great Barrington, Mass., retired from that corporation January 15th. Mr. Pomeroy came to Great Barrington in 1893, and immediately started to build the Riverdale Mills, being elected president and treasurer of the corporation. The mill was built, equipped and was put in operation in the summer of 1894, and has been in a thriving condition ever since. His resignation is due to a great pressure of business overwhelming him in his later years, together with the fact that the duties of director in two electric railroad companies demand his time and attention.

—J. C. Platt has resigned as superintendent of the Sibley Mills, Augusta, Ga.

—C. E. Pearce has resigned his position with the Tifton Cotton Mills, Tifton, Ga.

—Robert Shaul, overseer of spinning in one of the Berkshire Manufacturing Co.'s mills, Adams, Mass., has resigned.

—Charles Smart has been made night overseer of spinning at Cannon Mill No. 3, Concord, N. C.

—J. F. Shaw is superintendent of the Inman Cotton Mills, Inman, S. C. He was formerly with the Union Cotton Mills, Union, S. C.

—G. D. Thayer has been appointed manager of the Greylock Mills, North Adams, Mass.

—W. P. Wingate has charge of the Loray Mills, Gastonia, N. C.

—James A. Greer, formerly of Carrollton, Ga., has accepted the position of overseer of carding for the Avondale Mills, Avondale, Ala., which is a 40,000-spindle plant.

Woolen.

—Lewis Anderson, manager of the American Woolen Co., Skowhegan, Me., has retired from active connection with the mill, after twenty-seven years of busy and successful labor as a woolen manufacturer.

—Andrew Burnside, who recently resigned his position as overseer of the drawing-in room at the Woonsocket Worsted Mill, Woonsocket, R. I., has secured a similar position in the drawing-in room in one of the American Woolen Co.'s Connecticut mills.

—Thomas L. Cowan has accepted the position as superintendent of the mill of the H. F. Scatchard Manufacturing Company, Norristown, Pa.

—P. F. Dolan, formerly employed by W. J. Dickey & Sons, Baltimore, Md., is now employed by the Melville Woolen Co. of Fredericksburg, Va., as overseer of carding.

—James Donlon is now employed as overseer of carding by the Griswold Worsted Mills, Darby, Pa.

—George Dunn is the overseer of the spinning department of the G. C. Moore Worsted Mill, Westford, Mass.

—J. H. Evans has resigned as carder and spinner for the Grand Forks (N. D.) Woolen Mills, and contemplates building a new woolen mill and wool scouring plant.

—John J. Farrell, overseer of finishing, Proctorsville, Vt., is now with A. Roberts & Co. of Claremont, N. H.

—H. L. Hohlfeld, until recently general manager of the Von Deventer Carpet Co. at Greensboro, N. C., has resigned that position, and gone to Philadelphia. He is succeeded by R. A. Williams.

—John Haley, a well known wool and shoddy carder of Philadelphia, is now employed in that capacity by William Spink, Manayunk, Pa.

—John Hall of North Andover, Mass., has accepted the position of cloth inspector with the Brightwood Mfg. Co. of that town.

—William Hartley, formerly of Dexter, Me., has succeeded his brother, Frank W. Hartley, as overseer of dressing at Hinsdale, N. H. The latter has taken charge of the dressing at the Tremont Worsted Co., Methuen, Mass.

—Daniel J. Holland has succeeded George Hering as overseer of spinning at the Veasey & Hale Woolen Mill, South Groveland, Mass.

R. A. Latimer, superintendant of the Vassalboro Woolen Mills, North Vassalboro, Me., has resigned.

—J. F. McAfee is superintendent and general manager of the Western Woolen Mill Company, Topeka, Kans., which have been running all their machinery till 9 o'clock each night, making a fine line of cassimeres, which are made up into pants and special suits. B. A. Churchill is the designer and boss weaver; William Hofer, carder and spinner; Fred Mason, finisher. John Noland has charge of the pants shop and J. R. Beachum the special suit department.

—John Magner, a well known dyer, has accepted a position with the Conshohocken (Pa.) Woolen Co., Walter D. West, superintendent.

—Charles Peasley, formerly overseer of dyeing at the Hudson River Woolen Mills, Newburg, N. Y., is now overseer of dyeing at the Cowan Woolen Mills, Lewiston, Me.

—E. Pendergast, late at Moses T. Stevens' Mill at North Andover, Mass., is now boss carder at the S. F. Scott Mill, Uxbridge, Mass.

—John Parks, who has resigned as overseer of the weaving department of the Middlesex Mills, Lowell, Mass., was presented by the help under him with a gold watch chain and charm, also a note book.

—John Sheridan, formerly secondhand in the weave room of the Robert Bleakie Company, Hyde Park, Mass., is now overseer of weaving, taking the place of L. H. Love. Robert Scott has been promoted to secondhand.

—J. H. Spencer, dyer for the Hartford Carpet Company, Thompsonville, Conn., has resigned.

—Walter Smith has left Ashuelot, N. H., for Claremont, where he is to assume the position of overseer of weaving in a woolen mill.

—C. A. Stott, Jr., has succeeded C. H. Walker as superintendent of mills Nos. 1 and 2 of the Belvidere Mfg. Co., Lowell, Mass.

—C. A. Sagan, Jr., has recently been engaged as boss weaver by the Montville (Conn.) Woolen Co.

—S. M. Welch of Lebanon, N. H., has been appointed superintendent of the mills of the American Woolen Co., Winooski, Vt., while the overseers are: F. J. Brennan, carding department; J. G. Burns, spinning department; John Hardacre, weaving department.

—A. B. Widdowes has accepted the position of superintendent of the mills of Rawitser & Bro., Mystic, Conn. He was formerly with the Amsterdam Woolen Co., Amsterdam, N. Y.

Knit.

—H. T. Ballard, late of Toronto, has accepted a position as boss knitter with the Schofield Knitting Co. of Oshawa, Can.

—Thomas Black has been obliged to resign his position with Foster Black of the Elizabeth Knitting Mills, Berkley, Va., on account of ill health.

—H. F. Becker is now the manager of the Williamsburg (Va.) Knitting Mill Co.

—E. Chapin, formerly superintendent of the Williamsburg Knitting Co., Williamsburg, Va., has accepted a similar position with Foster, Black & Co., Elizabeth Knitting Mills, Berkley, Va.

—John H. Doyle has resigned his position as foreman of the finishing room of the West Shore Knitting Mill, Amsterdam, N. Y., to assume a similar position with the Troy Knitting Mills, Troy, N. Y., of which John Nolan, formerly of Amsterdam, is manager.

—P. T. Donahoe has resigned as overseer of finishing at the Knitted Fabric Co.'s mill, Lawrence, Mass.

—James Farley, late of Capron Knitting Co., Utica, N. Y., is now in charge of finishing room and fixing sewing machines with the Diana Knitting Co., Johnstown, N. Y.

—Joseph Kennedy, who for the past year has been foreman of the finishing department of the Troy Knitting Co., Troy, N. Y., has resigned his position to accept that of superintendent with a knit goods firm in Canada.

—Thomas Kilduff has resigned from the Cohoes Knitting Co., Cohoes, N. Y., and is now superintending a large knitting mill at Hudson, N. Y. The help in the Cohoes mill presented him with a gold watch upon his retiring.

—Mr. Malcolm, of Malcolm & Co., Catskill, N. Y., has retired, and the mill is now run by a stock company.

—Orin Munro, overseer of knitting in the Star Knitting Co., Cohoes, N. Y., will go to Elmira to reside.

—Michael Organ, late superintendent of the Sagamore Knitting Co., Mechanicsville, N. Y., has accepted a similar position with the Parsons Mfg. Co., Cohoes, N. Y. Mr. Organ succeeds Charles Hay, who had been superintendent for the Parsons Mfg. Co. for a number of years past, until compelled to resign on account of ill health.

—William Palmer has been appointed superintendent of the Waterford (N. Y.) Knitting Mill.

—W. D. Stone, bookkeeper for some time past for N. L. Birge & Sons Co., Bristol, Conn., at a special meeting of the company was elected to fill the vacancy caused by the death of Secretary George W. Birge last September. Mr. Stone was also elected a member of the Board of Directors. Ex-Senator John Birge is general manager, also president and treasurer of the company.

—Patrick Stack, superintendent of Newland & Neilson's knitting mill at Mechanicsville, N. Y., has resigned his position to accept a similar one at Sandlake.

—Martin Shaughnessy has been promoted from boss knitter to superintendent of the Eagle Knitting Co., Rockton, N. Y.

—M. J. Tompkins, overseer for the past seven years of the steaming, finishing and press room departments of the Globe Knitting Mill of the F. W. Kavanaugh Mfg. Co., Cohoes, N. Y., has resigned.

—Louis P. Wilson, late superintendent of the Uncas Knitting Co., Danielson, Conn., has been given charge of the hosiery department of the Lawrence Mfg. Co., Lowell, Mass.

—G. A. Schneebeli of G. A. Schneebeli & Co., manufacturers of edgings and braids, Nazareth, Pa., whose selling agent is Geo. W. Chapin of Philadelphia, has started on an extended tour through Florida. Mr. Schneebeli will visit Palm Beach, Tampa, St. Augustine, Jacksonville and many other points of interest.

Deaths.

—Hezekiah Conant, founder of the Conant Thread Company of Pawtucket, R. I., which is now known as the Pawtucket branch of the J. & P. Coats Thread Company, died January 22. He was born in Dudley, Mass., July 28, 1827. He started in to learn the printers' trade, but after a few years went to work in a machine shop. He spent his evenings in learning mechanical engineering, developing great ability in that line and also as an inventor. He constructed a machine for dressing sewing thread and invented an automatic machine for winding spool cotton. The Willimantic Linen Company purchased one-half of the patent right and engaged Mr. Conant in 1859 as a mechanical expert. He remained with this company nine years, the last three of which he was superintendent of the company. In 1868 Mr. Conant resigned his position with the Willimantic Company, and removed to Pawtucket, where he organized the Conant Thread Company, and became the treasurer of the corporation and the manager of the works. In May, 1869, he went to Europe and effected a combination with J. & P. Coats of Paisley, Scotland, by which that firm became a partner in the Pawtucket enterprise. The works now cover about forty acres of land and the capital invested is nearly $5,000,000. Mr. Conant was president and director of several banking institutions, and in the welfare of his native town always manifested great interest. He was also president of the American Yarn Mfg. Co. of Pawtucket.

—W. F. Cochran of the Alexander Smith & Sons Carpet Company, Yonkers, N. Y., died recently in New York City, aged 66 years. Mr. Cochran was born in the latter city, beginning his business career in 1847 with Swift, Waldron & Co., on Front Street. In 1869 he married Miss Eva Smith, only daughter of Alexander Smith, head of the Alexander Smith & Sons Carpet Company, after the death of whom Mr. Cochran became the controlling factor in the company, which today employs about 8000 hands. Mr. Cochran was very charitable, his contributions for such purposes being said to aggregate $1,000,000. Hollywood Inn, the workingmen's club at Yonkers, N. Y., probably the most successful organization of its kind in this country, was one of his special interests and owes its existence to his liberality.

—Swits Conde, of the Swits Conde Company, Oswego, N. Y., died at the home of his daughter in New York City, January 21. He was born in Oswego fifty-seven years ago. The business at Oswego was established by his father, Henry Conde, upon whose death it went to the son. Swits Conde developed them until they ranked among the largest knitting mills in the world. He was also a large stockholder in the Standard Yarn Co. Mr. Conde was known as a man of large charity and much public spirit. For the past month he had been in ill health. A widow and four children survive him.

—William C. Chapin, formerly a prominent figure in the woolen industry, died last month at Andover, Mass. He built the Pacific Mills at Lawrence, and was their manager for a number of years. He also started the Riverside Mills of Olneyville, R. I. About 12 years ago he retired from active business.

—Leonard G. Gardiner, a retired knit goods manufacturer of Amsterdam, N. Y., died recently, aged 76 years. He was one of the leading citizens of Amsterdam. He is survived by a widow, four sons and a daughter.

—William B. Bullock, for many years identified with the wool and woolen manufacturing interests of Philadelphia and vicinity, died recently. He was one of the original stockholders of the Conshohocken Woolen Co., and had always been closely connected with this firm.

—Charles A. Brown, president of the Rob Roy Hosiery Company, Troy, N. Y., and Hoosick Falls Hosiery Co., at Hoosick Falls, N. Y., died early last month. The immediate cause of his death was heart failure, due to an attack of appendicitis. He leaves two sons and one daughter.

—George M. Atwater, one of the oldest and best known men of Springfield, Mass., died in January. He was born in 1814 in Bramford, Conn. He was interested in the Glasgow Mills at South Hadley Falls and the local street railway company, which he founded and supported during the trying years of its beginning.

—The suicide of Ewald Balthasar was a great shock to banking and manufacturing circles in New York and New Jersey. He had suffered from melancholia, caused by diabetis and neuralgia, and to that his suicide is attributed. He was born in Barmen, Germany, in 1834. The larger part of his business career in this country was devoted to banking, having been connected 35 years with the firm of Haligarten & Co., of which he was a prominent factor. In 1898 he became interested in silk manufacture, and his interests embraced the Home Silk Mills and the Haverstraw Dye Works, and he was owner of the Landru Silk Mills at West Hoboken, which some time ago were merged into the Home Silk Mills. At one time he also controlled, with his son Arthur, a silk dyeing works on Broome St., New York.

QUESTIONS AND ANSWERS

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Average Count of Yarn.

Editor Textile World:

I notice that you have answered in the December issue, an enquiry as to the method of calculating the average number of yarn. Suppose I have four frames on No. 8 and four frames on No. 10 cotton yarn, each frame having an equal number of spindles. It would seem that the usual method of calculating would apply as follows:

$$\begin{array}{r} 4 \times 8 = 32 \\ 4 \times 10 = 40 \\ \hline 8 \qquad 72 \end{array}$$

$$72 \div 8 = 9 \text{ average count.}$$

However, when I use this calculation with the grain method of numbering yarn, the result is very different. A 120 yard skein of No. 8 cotton yarn weighs 125 grains; the same length of No. 10 yarn weighs 100 grains. Using these weights in the calculation we have the following:

$$\begin{array}{r} 4 \times 125 = 500 \\ 4 \times 100 = 400 \\ \hline 8 \qquad 900 \end{array}$$

$900 \div 8 = 112\ 1/2$ grains = No. 8 8/9 cotton yarn.

Will you explain the difference?

Unterschied (210).

Our correspondent has fallen into two errors. First, he has used the number of spinning frames (or spindles) for his calculation. This error can be shown by supposing the production of a mill on one day to be as follows:

4 frames on No. 8 yarn.....2400 lbs.
4 frames on No. 10 yarn.....2000 lbs.

and on the next day the production, by reason of some change in the work or help, to be as follows:

4 frames on No. 8 yarn.....2000 lbs.
4 frames on No. 10 yarn.....2400 lbs.

On the first day there was an excess of 400 pounds of the coarse yarn. On the second day there was an excess of 400 pounds of the fine yarn, and yet by "Unterschied's" method of calculation the average size would be the same (No. 9) for each day, which, of course, is clearly not the case.

The average size of a quantity of yarn composed of different sizes depends upon the weight and size of each kind of yarn only. The number of spindles or the number of frames upon which this yarn was spun has absolutely nothing to do with the case.

The second error into which our correspondent has fallen is in having used the same method of calculation for two different systems of yarn numbering.

The first system, by which sizes are called Nos. 8 and 10, is based upon the length of yarn in a fixed weight; in this case, the number of 840 yard skeins in one pound.

The second system, by which the sizes are called 125 grain and 100 grain is based upon the weight of a fixed length of yarn.

One employs a fixed weight (1 pound) and varying length; the other employs a fixed length (120 yards) and varying weight.

Now what is the "average size" of an assortment of yarn of different sizes? It is the size that would have resulted if the same weight of yarn had been spun of a uniform size into the same length, the excess of the coarse yarn being carried to the fine yarn to make the size the same throughout the whole length, the total weight and length being kept the same.

Suppose we have two lengths of shafting, a b and b c. The total weight of one, a b, is 8 pounds, and it weighs 8 pounds per foot. The total weight of the other, b c, is 4 pounds, and it weighs 2 pounds per foot. The average weight per foot of the two pieces would be the average weight per foot obtained by rolling the two lengths into a shaft, d e, of uniform size and equal in length to the combined lengths of the two. The calculation in this case would be as follows:

a b, 8 (lbs.) ÷ 8 (lbs. per ft.) = 1 ft, length, a b
b c, 4 (lbs.) ÷ 2 (lbs. per ft.) = 2 ft, length, b c

Total, d e, 12 lbs. 3 ft. d e

12 (lbs.) ÷ 3 (ft.) = 4 lbs., average weight per foot, d e

Suppose that the size of the shafting is given in length per pound as follows: Shaft, a b, weighs 8 pounds and measures 1/8 foot per pound; shaft, b c, weighs 4 pounds and measures 1/2 foot per pound. The calculation would then be as follows:

a b, 8 (lbs) × 1/8 (ft. per lb) = 1 ft, length, a b
b c, 4 (lbs) × 1/2 (ft. per lb) = 2 ft, length, b c

Total, d e, 12 lbs. 3 ft. d e

3 (feet) ÷ 12 (lbs.) = 1/4 foot, average length per pound, d e

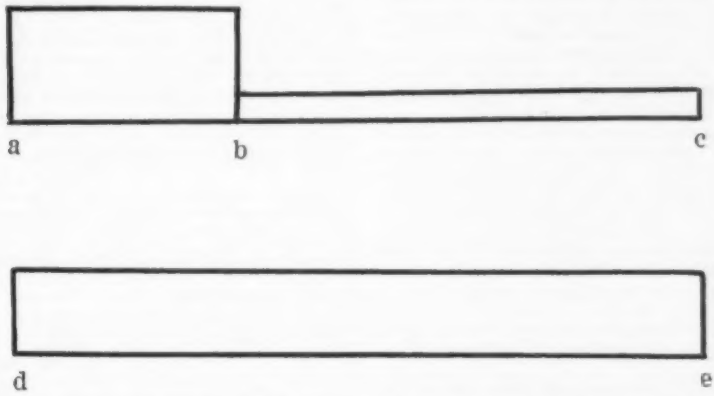
Four pounds per foot is equivalent to 1/4 foot per pound, consequently the result is the same in both cases.

The first method by which the size of shafting is stated by the weight of one foot corresponds to the grain system of number-

ing cotton yarn in which the size is given in the weight per 120 yards of yarn.

The second method, by which the size of the shafting is stated by the length of one pound, corresponds to the system of numbering yarn in which the size is given in the length of one pound of yarn.

The two methods of calculation as applied to yarn are illustrated by the following example:



What is the average count of yarn in a cotton mill with a daily production of 3,000 pounds divided as follows:

1,000 lbs. 125 grains or No. 8 cotton yarn
2,000 lbs. 100 grains or No. 10 cotton yarn

3 000

1,000 × 7,000 = 7,000,000 grains, weight of the 125 grain yarn
2,000 × 7,000 = 14 000 000 grains, weight of the 100 grain yarn

21,000,000 grains.

7,000,000 ÷ 125 = 56,000 skeins (120 yds.) of 125 grain yarn
14,000,000 ÷ 100 = 140 000 skeins (120 yds.) of 100 grain yarn

Total, 196,000 skeins (120 yds.)

21,000 000 ÷ 196,000 = 107 1/7 average number of grains per skein.

This calculation is carried out in detail simply to illustrate the process. Life in the mill is too short for such a long winded method. The following short method gives the same result:

1,000 ÷ 125 = 8
2 000 ÷ 100 = 20

3 000 28

3,000 ÷ 28 = 107 1/7 average grains per skein.

If the sizes are indicated by Nos. 8 and 10, instead of by grains, the calculation is made as follows:

1,000 lbs. × 8 = 8,000 skeins (840 yds.) of No. 8 yarn
2,000 lbs. × 10 = 20 000 skeins (840 yds.) of No. 10 yarn

3 000 lbs Total. 28,000 skeins.

28,000 ÷ 3 000 = 9 1/3, average No. of the yarn.

It will be found that No. 9 1/3 cotton yarn is equal to 107 1/7 grain yarn, thus showing that the result is the same by both calculations.

A Fulling Table.

Editor Textile World:

Please send me a fulling table giving the shrinkage in fulling in inches per yard.

Lagerglocke (208).

The average shrinkage of a woolen fabric in finishing should be determined as nearly as possible when the fabric is laid out. It is a detail of construction which, in connection with the weight per yard from the loom and loss of total weight in finishing, determines the weight of the finished cloth per yard. The shrinkage in length and width has much effect on the appearance of the finished fabric, and this is an additional reason why it should be decided upon in advance of the manufacture of the goods.

The question as to how much a woven cloth must be shrunk in length in finishing to weigh a given number of ounces per yard depends upon the percentage of loss of the total weight in finishing and upon the weight per yard from the loom. The loss of weight in finishing varies widely with the stock in the goods and the method of finishing. Worsted cloth made from yarn containing but little oil or other foreign substances may lose not more than 5 per cent. or even less, while the loss in the case of kerseys or beavers made from oily, dirty stock, sometimes reaches 25 per cent. or more.

The following example will illustrate the method of calculation. The first piece of a particular fabric finished measured 45 yards and weighed 26 ounces per yard from the loom. When finished, it measured 40 yards and weighed 23 4/10 ounces per yard. What is the percentage of total loss of weight in finishing, and how should the shrinkage of woven pieces be regulated that vary in weight per yard from the trial piece, in order to bring the finished pieces to weigh 23 4/10 ounces per yard?

The total weight of the woven piece was 45 × 26, equals 1170 ounces. The total weight of the finished piece was 40 × 23 4/10, equals 936 ounces. Hence the loss in finishing was

1170 — 936, equals 234 ounces, or 20 per cent. of the woven weight.

The proper shrinkage of pieces for different woven weights per yard is more easily calculated by assuming a woven length of 100 yards. For example: How much should a piece of the same fabric weighing 25 1/2 ounces per woven yard be shrunk to weigh 23 4/10 ounces per yard?

100 × 25 1/2 equals 2550 ounces (weight of woven piece) — 510 ounces (20 per cent. loss), equals 2040 ounces (weight of finished piece.)

2040 ÷ 23 4/10 equals 87 2/10 yards finished.

100 — 87 2/10 equals 12 8/10 per cent. shrinkage in length for woven goods weighing 25 1/2 ounces per yard woven to give a weight of 23 4/10 ounces per yard finished.

The equivalents of the different percentages in inches per yard are readily calculated. Taking the case cited: One yard equals 36 inches × 12 8/10 equals 4 6/10 inches per yard as the equivalent of 12 8/10 per cent. These equivalents of different percentages in inches per yard are needed by the fuller, as the progress of the shrinkage in fulling is regulated at the fulling mill by placing two strings one or more yards apart on the selvages and noting the variations of this space from time to time during the fulling operation.

By the method already given, the shrinkage for any woven weight per yard is calculated and a table constructed for the fuller. Taking the case cited with a loss of total weight of 20 per cent. and a desired finished weight of 23 4/10 ounces per yard, the table would be as follows:

Ounces per Woven Yd.	Shrinkage in length. Per ct.	In per yd.
27	7 7/10	2 3/4
26 8/10	8 4/10	3
26 6/10	9 1/10	3 1/4
26 4/10	9 7/10	3 1/2
26 2/10	10 4/10	3 3/4
26	11 1/10	4
25 8/10	11 8/10	4 1/2
25 6/10	12 5/10	4 1/2
25 4/10	13 2/10	4 3/4
25 2/10	13 9/10	5
25	14 6/10	5 1/4

A variation from 7 7/10 per cent. for 27 ounces to 14 6/10 per cent for 25 ounces flannels, is too wide to give good results in finishing, consequently it is better, when the woven weight per yard varies as much as this, to vary the shrinkage less and get a more uniform felt in the goods, although this practice may result in greater variation in the finished weight per yard.

When the goods are flocked, variations in the woven weights per yard can, within a limited range, be equalized in the finished cloth by varying the quantity of flocks applied to the goods.

Much better results are secured by keeping the variations in the woven weights per yard within narrow limits, thus avoiding any necessity for wide variations in the flocks or shrinkage in length. A clear understanding of the methods of calculation just given will enable one to compile a fulling table suitable for any grade of goods.

Ramie.

Editor Textile World:

Please give me some information in regard to ramie. Is it being manufactured in New England at present? What class of machinery is required for working it? Can it be mixed with silk?

Wilhelm (211).

There have been several attempts made in this country to spin ramie, but all have been failures. This material is successfully worked in several places in Europe. Special machinery is required, although European linen manufacturers have manufactured ramie rope on their regular machinery. We have never heard of ramie being mixed with silk. Further information as to ramie will be found in another part of this issue.

Length of Leg for Children's Hosiery.

Editor Textile World:

What is the standard length of leg for boys' hose, both plain and ribbed, in sizes 8 1/2 to 10?

Charbon (209).

We publish in this issue tables giving the standard sizes for knit goods, both for underwear and hosiery. They give the information asked for by our correspondent.

Silk for Wings of Airships.

Editor Textile World:

Can you inform me what kind of silk cloth is best adapted for the wings of airships? I am building an airship and desire the cloth as light and strong as possible, while at the same time of such texture that the air cannot pass through it.

Airship (212).

We know of no tests to determine the strength of different silk textures. The qualities required for cloth for airship sails are so little known that we would judge special tests to be necessary to determine what silk fabric is best suited for this purpose. If any of our readers are able to supply the material required by "Airship," they can communicate with him through this office.

New Publications.

Wool Production and Trade; by Dr. Willy Senkel; H. Lauppschen Buchhandlung, Tuebingen; price $1.50.

The author has collected a large amount of information concerning the world's production of wool, and has arranged it in a very systematic form. Particular attention is given to the German clip, following which come chapters on the wool product of Australia, Africa, North and South America and other countries. The methods of handling and marketing wool until it reaches the mill are described at length. The organization and conduct of the European terminal top markets is very interesting. Graphic

charts show the course of wool prices, German exports and imports during a series of years. The work is in German and can be imported through this office.

Technical Lexicon of the Knitting Industry; English, French, German; compiled at the Knitting School in Limbach; Rob. Birkner, Apolda; price $1.00.

The title of this book sufficiently indicates its value. We know of no other work of this kind dealing with the knitting industry. It will prove a great aid to readers of French and German works that treat of knitting.

Technical Lexicon for the Electrical Industry; English, French, German; by Paul Blaschke; S. Hirzel, Leipzig; price $1.75.

The value of technical publications in French and German to all engaged in technical pursuits makes the technical dictionary a necessity. This is especially true of the electrical industry, which is of comparatively recent development, and where new words have been coined and new meanings given to old words in each of the three languages, French, German and English. This book appears to have been compiled with great care. Especial credit is due for the display type used. Orders can be sent to this office.

Progress in Flax Preparation; by E. Pfuhl; N. Kymmel, Riga; price $1.25.

This book treats of the various methods of retting flax, including what is termed natural (river) and artificial retting. The subsequent processes by which the fibre is extracted and prepared for the linen mills are also described and illustrated. The work supplementary to the treatise, by the same author, which was published in 1886, and gave a description of flax preparation as practiced at that time. The older work costs 50 cents. Both are in German and can be ordered through this office.

Reckoning Tables for Multiplication; by J. Riem; Ernst Reinhardt, Muenchen. Price $2.25.

The tables in this book give the product of any number from 2 to 99 inclusive multiplied by any number from 1 to 9999 inclusive. The compiler is a mathematician connected with the Basle Life Insurance Co. The work is well adapted for quick reference and will be found useful where many calculations in multiplication are to be made. With the exception of a brief explanation of how to use the tables, the work consists entirely of figures. It is, therefore, adapted for use by readers of English. The work can be ordered through this office. We will furnish an English translation of the explanatory preface to purchasers if desired.

Handbook of Technical Information for 1902, by Hubert Joly; K. F. Koehler, Leipzig; 1096 pages, illustrated; price $2.50.

The ninth edition of this year book has been enlarged to accommodate the new material. This work is intended for the use of engineers and architects. It seeks to answer the vast number of questions which are constantly arising regarding the dimensions, cost and manufacturers of materials.

The subjects are arranged alphabetically. In addition to general information a price list is given when practicable, together with the addresses of different manufacturers of the material in question.

The work is in German and can be imported through this office.

Treatise on Fabrics, Ancient and Modern, by Hippolyte-Aimable Soret; H. Saint-Denis, Elbeuf, France; price $3.00.

This work of 302 pages treats of the various weaves adapted to harness weaving, together with the methods of drawing in the warps.

Weaves from the simplest to the most complicated, both single and double, mainly adapted for men's wear goods, are clearly described and illustrated. The text is in French, and the work can be secured through this office.

The Textile Trade, by August Demmin; Rud. Bechtold & Co., Wiesbaden; price $1.00.

This work is an historical treatise of the textile industry. The development of the art of working textile fibres, from the earliest times, is described and illustrated. The first section is devoted to Spinning; the second, Weaving; third, Knitting and Knotting; fourth, Embroidery; fifth, Crocheting; sixth, Lace-making Sewing; seventh, Account of Various Collections of Samples; eighth, Literature of the Art.

The work, which is profusely illustrated, is in German, and can be imported through this office.

Conversion Tables for the Various Systems of Weights, Measures and Values, by Gustave Voigt, Merseburg, A. S., Germany; price $1.00.

The tables in this book enable readers at a glance to convert one system of reckoning weights, measures, and values per unit into other systems. The contents are as follows: 1. Measures of length; inches and yards into centimeters and meters; centimeters and meters into inches and yards. 2. Weights; English pounds into kilograms; kilograms into English pounds. 3. Fluid-Measures; Imperial gallons into liters, liters into imperial gallons. Calculations of prices.

These tables will prove valuable to all having occasion to use the different weights and measures.

Ventilation and Air Moistening; by Heinrich Kunz; Art. Institut Orell Fuessli; price 50 cents.

This pamphlet treats of the subject from the standpoint of the spinner, and is illustrated with drawings of ventilating and air moistening apparatus. The text is in German. Orders can be sent to this office.

Bobbin Lace; by Brigitta Hochfelden; Franz Ebhardt & Co., Berlin; price, 50 cents.

This work treats of the making of bobbin lace, so popular at the present time. There are many illustrations not only of the work, but also of the bobbins, pillows and other accessories of this industry. An improved device made of bristles and used instead of the pillow, is shown. The work is in German and can be ordered at this office.

Brettchen Weaving; by Margarethe Lehmann-Filhes; 82 illustrations; Dietrich Reimer, Berlin; price $2.25.

This work treats of a method of weaving, now unused, but which in ancient times was employed in the manufacture of narrow fabrics such as saddle girths, straps, garters and belts. Small, square plates were used for raising and lowering the warp. The yarn passed through holes, one at each corner of the plates, a number of which were placed side by side. By turning the plates backwards or forwards the ends were raised or lowered. The illustrations show not only the finished goods, but also the apparatus employed. The work is in German and can be ordered at this office.

Business Literature.

Handbook of the American School of Correspondence. This is a catalogue giving full particulars in regard to the American School of Correspondence, Boston, Mass. A textile department has recently been started in connection with their other branches. Their intention is to make this as complete as any textile course is given by correspondence. It includes,—warp preparation and weaving; textile design and fabric structure; cotton spinning; woolen and worsted spinning; textile chemistry and dyeing. Competent instructors have been engaged, who are experts in their departments.

A copy of this catalogue will be mailed to anyone interested.

Exhaust Heads and Steam Traps; B. F. Sturtevant Co., Boston, Mass. This is a folder giving the description, dimensions, illustrations and prices of the various exhaust heads and steam traps made by this well-known concern.

Sterling System for Shaving and Dust Collecting; The Sterling Blower & Pipe Mfg. Co., Hartford, Conn., have issued a booklet containing copies of letters from their customers in all parts of the country stating their experience with the Sterling system. These letters furnish convincing evidence of the success of the dust collecting apparatus made by this firm.

Heaters; The American Blower Co., Detroit, Michigan. We have received catalogue No. 135 published by this firm, describing and illustrating their various types of hot blast heaters.

Looms; Kilburn, Lincoln & Co., Fall River, Mass., have issued an illustrated booklet, calling the attention of the trade to the various types of high speed looms built by them.

New Color Cards.

—Katigen Chrome Blue 2 R. Farbenfabriken of Elberfeld Co., New York. This sheet shows four samples of cotton yarn colored with different shades of blue with Katigen Chrome Blue 2 R. Formulas and directions are attached.

—Cyanole Green B and 6 G, The Cassella Color Co., New York. This card shows 10 samples, wool yarn and cloth dyed with the above named colors in various shades of green, drab, blue and brown.

—Diamingelb C P; Jaune Diamine C P; Diamine Yellow C P; Cassella Color Co., New York. This firm has sent us samples of cotton yarn dyed in two shades of yellow with the samples mentioned. The colors are very clear.

—Cassella Color Co., New York; Diamine Fast Yellow F F. This card shows 15 samples of yarn, loose cotton and cloth colored with Diamine Fast Yellow F F. One cloth sample is printed and padded with Diamine Fast Yellow F F. Full directions and formulas are given.

Fashionable shades for men's wear; Farbenfabriken of Elberfeld Co., 40 Stone Street, New York City; 40 shades dyed on worsted cloth and suitable for men's wear. Full directions and formulas are given.

Fast Light Yellow G. and 3 G, Farbenfabriken of Elberfeld Co., New York. This card shows three samples of cloth, two woolen and one cotton, dyed with Fast Light Yellow G and 3 G and printed with Fast Light Yellow 3 G. Full directions and formulas accompany these samples.

Calendars Received.

C. W. Trainer Mfg. Co., 95 Pearl Street, Boston, Mass., dealers in magnesia, asbestos materials and various kinds of coverings, have sent us one of their large monthly calendars for 1902.

Goodhue & Studley, Wools and Noils, Boston, Mass., have issued a calendar for 1902, containing a picture of "His Majesty," which proved so popular in 1901.

The Chase Pulley Co., Wood Rim Pulleys, Providence, R. I. We have received a monthly calendar for 1902 from this firm on which is shown a fine engraving of Alexander and Diogenes.

G. & A. Bargamin Co., Plumbing and Steam Heating, Richmond, Va., have sent us one of their monthly calendars for 1902.

Kilburn, Lincoln & Co., Fall River, Mass., have sent us one of their monthly calendars for 1902, containing a sheet for each month, all enclosed in a neat leather case, making it very convenient for use at the desk.

S. J. Corey, 273 Congress Street, Boston, dealer in dyestuffs and chemicals, has issued a beautiful calendar, artistic in every respect. It bears a reproduction of the famous painting, "The Flight of Time," in which a nude female is represented as watching the moving shadow on a sun dial. It is a work of art in every respect.

John Cathcart & Co., 115 Franklin Street, New York City, have sent us a copy of their attractive calendar for 1902, showing a marine view with a Gloucester fishing boat.

Hughes Fawcett, 115 Franklin Street, New York City. We have received copies of Mr. Hughes Fawcett's 1902 calendar, showing a view of an old-fashioned spinning wheel operated by two generations. It is an ornament for house or office.

Too Much Reading Matter.

Here is a complaint from a subscriber which is rather unusual, and although a criticism, yet we cannot help feeling that it is good evidence that we give good value for money.

Colon, Mich.

Guild & Lord:

Herewith we hand you check for $3 for renewal of our subscription. The great trouble with the Textile World is that you have too much reading matter. A person busy from 7 o'clock in the morning until 6 o'clock at night gets very little time to read the great amount of information that you give.

Lamb Knit Goods Company.

A National Association of Waste and Shoddy Dealers.

At present the dealers in wool and cotton waste and shoddy are without such an association as is found in nearly every other branch of trade and industry. At the same time there is no branch of industry which at the pres nt time is in greater need of a national organization in which to express views upon matters affecting its interests.

The need of such an organization has been so keenly felt by the trade that a number of representative men have started a movement to form a national association. The preliminary steps are being taken by John J. Ryan, who is the general manager of the United Waste Manufacturing Co., of Troy, N. Y. Mr. Ryan has addressed the following to the trade and the response has been very encouraging:—

Troy, N. Y., Jan. 17, 1902.

Dear Sir:—I take the liberty of asking you your opinion as to the advisability of holding a meeting at some convenient place, in the near future, for the purpose of perfecting an organization of the cotton and wool waste and shoddy dealers of America. It seems to me as well as others with whom I have spoken, that such an organization is desirable, and would do much to promote the interests of the dealers. I know of no branch of business that has reached as important development as our trade, in which no organization exists, and in view of the many benefits that business men in other trades have derived from organizations similar to the one contemplated, it seems unnecessary to point out the advantages that would emanate to us, in the event of an organization being perfected as suggested. A trade federation not only advances the interests of members in a material way, but also in a social way. Nothing could be more pleasant, it seems to me, than a coming together of business men engaged in the same trade, for a mutual exchange of ideas and benefits, and social intercourse. Will you kindly, upon receipt of this letter, let me know your opinion in the matter, and also if in the event of a meeting being called, you would attend such meeting, and lend your assistance to carry this movement to a successful termination?

Respectfully yours,

John J. Ryan.

145 River St., Troy, N. Y.

We urge all who are interested in this proposition to communicate with Mr. Ryan in regard to it.

O. S. Janney & Co.

The Boston office of O. S. Janney & Co. has been removed from 70 Kilby Street to 247 Atlantic Avenue. It is under the management of F. L. Whittimore, as formerly.

National Association of Woolen and Worsted Overseers.

The following notice is addressed to members of this association:—

Leominster, Mass.

To the Members of the N. A. of W. & W. O.

Any member of this association who has changed his address is requested to notify the secretary as to his present address. The association is about to issue a new manual, and it is advisable to have the addresses of the members correct. The list should be ready by March 1st. I trust that all will notify me promptly, so that the work may not be delayed.

Walter Pickford, Secretary.

Leominster, Mass.

An Opportunity for Ambitious Young Men.

The founders of the American School of Correspondence have arranged courses of instruction in woolen and worsted spinning, cotton spinning, textile design and fabric structure, warp preparation and weaving, textile chemistry and dyeing, etc. Particular attention is given to a thorough grounding in mathematics and physics. The courses are designed to enable ambitious young men holding subordinate positions to acquire the necessary training which leads to advancement. Section-hands and second-hands of woolen, worsted or cotton spinning, warp dressers, young men who are learning to become dyers, chain builders, card cutters, or perchers who wish to gain a knowledge of designing,—all these and others can become more valuable in their departments and increase their earning capacity.

Every ambitious young man in the selling-house today must know more of the goods that he is handling than the "ticket" tells him, if he wishes to advance. A course in this School offers him an opportunity to know his yarns and fabrics technically.

The regular tuition for the full textile engineering course is $50, but we are informed that the school offers a number of free scholarships affording tuition without cost, the only expense being the actual cost of instruction papers and postage. Particulars may be had by addressing the American School of Correspondence, Boston, Mass., mentioning the Textile World.

—The Burt Mfg. Co., of Akron, Ohio, announce recent orders for very large Cross Oil Filters from the Government Printing Office at Washington, from McIntosh, Seymour & Co., Auburn, N. Y., the large engine builders, and from the De Beers Consolidated Mining Co., Ltd., of Kimerley, South Africa.

The Buffalo Forge Co.

An explanation of the close touch maintained by the Buffalo (N. Y.) Forge Co. with the trade throughout, not only the United States, but the world, is found in the practice adopted by them of having each of their salesmen visit the Buffalo works at least once in each year.

During the first week of 1901 the company called the representatives of its various branch offices to the factory for a week's conference. The benefits from that meeting were so marked that they have been felt throughout the succeeding year, and so it has been decided that these meetings shall be of annual occurrence.

Each employee is requested to prepare a paper or technical article on an equipment furnished within the year, to be read and discussed at the meeting. The choice of the subject is usually left to the individual, by which means most interesting features, of widely varying natures, are described.

At the 1902 meeting, just completed, articles upon heating and ventilating installations of different characters, and, in short, fan-system applications to a large variety of industries, were read at three sessions each day and were afterward discussed by the assembled engineers. The meeting was followed by a banquet.

Trade Follows the Flag.

An illustration of the slogan "Trade Follows the Flag" is to be found in the order of Captain C. R. Darnall, U. S. A., commanding the military hospital, Iloilo, Philippine islands, who has placed with the Pittsburg Boiler Scale Resolvent Co., Park building, Pittsburg, Pa., an order for 1000 pounds of boiler compound. This compound will be used in the boiler of the government ice plant at the military hospital, Iloilo, where the water is highly impregnated with lime and salt, necessitating the use of a remedy of this kind. The Pittsburg firm had previously during the past year shipped boiler compound for the government to the Philippine islands.

International Sprinkler Co., Expands its Business.

The International Sprinkler Co. has taken another step forward in conducting their Southern business by creating a Southern department instead of a branch office, at Charlotte, N. C., and adding to their force at that point in the capacity of Southern Manager, Mr. George F. Smith, who took charge of the territory south of Virginia and as far West as the Mississippi River on the first of the year.

Mr. Smith has had a thorough insurance and sprinkler training for 30 years past. He is a thoroughly practical man in his profession, having started in it as foreman of the old Providence Co. in the early 70's. From this position he was advanced to superintendent of construction in the Automatic Extinguisher Co. of New York, and was again advanced after acquiring this thoroughly practical training to the position of contracting agent in Philadelphia for the old Grinnell Sprinkler Co. In '87 he was elected Deputy Fire Marshall and Inspector for the Stock Insurance Companies of Pittsburg, Pa., and for the following three years occupied various inspecting positions for the great stock companies. In 1890 he was elected to the position of Assistant Manager of the Factory Insurance Association of Hartford, Conn.

The International Sprinkler Co. is now so well established and has equipped so many properties all over the country east of the Mississippi river that it stands in the front rank of sprinkler manufacturers. This company have done much to advance the cause of fire protection by the valves they have placed on the market in perfected condition, such as the dry pipe valve and variable pressure alarm valve, which are now generally conceded to be devices of great merit. An independent and financially strong and aggressive company like the International Sprinkler Co. should have the liberal support of the country at large.

The International Sprinkler Co. says to their patrons that there is no menace whatever in the infringement suit on their sprinkler head, and they offer absolute security to protect customers from any trouble whatsoever on this score.

The suit against the International Co. by the General Co. on their dry pipe valve, they claim, has no weight, because the fundamental patent has expired.

The International Co. today are manufacturing devices and installing work of the highest standard, both in engineering and actual workmanship, and they are doing this at fair prices to buyers.

It is therefore to the interest of prospective purchasers of automatic sprinkler fire protection to secure the International Company's figures before awarding a contract.

The International Co. are directly represented in New York, the South and West. In the New England states their representatives are The Rhode Island Supply & Engineering Co., Providence, R. I., who are continually increasing the scope and amount of their business. Their Canadian representatives, J. McGuire & Co., of Montreal, have become one of the most important factors in the business throughout Canada.

Cling-Surface in a Lowell School.

The following is one of many similar letters received by the Cling-Surface Mfg. Co.:

Lowell, Mass., Oct. 30, 1901.

Mr. Chas. F. Chase, Eastern Manager,
Cling-Surface Mfg. Co., Boston, Mass.

Dear Sir: I have yours of the 29th inst. I have used your Cling-Surface now for more than a year and have had very good results from it. We have a number of drives where short, tight belts have been necessitated owing to the peculiar arrangement of our machinery in this building, and they have given us much trouble in times past. By the use of Cling-Surface we have been enabled to run these belts to much better advantage and have noticed that in the longer drives a much looser belt can be carried to do the same work. I feel that I am perfectly warranted in endorsing Cling-Surface most heartily.

Yours truly,
Wm. W. Crosby.

American Knitting Machine Co. vs. Weierman.

This case of the American Knitting Machine Co. against Charles S. Weierman, a hosiery manufacturer of Philadelphia, has attracted considerable attention in the Philadelphia district and even in wider circles, and there have been various versions of it in circulation. While the case was pending, nothing could properly be said about it, but it has recently been argued before the Court of Common Pleas No. 5 in the city of Philadelphia, and we learn that decision has been rendered in favor of the plaintiff, the American Knitting Machine Co.

We are informed by the Company that in the latter part of 1900 and early part of 1901 they sold to Mr. Weierman forty new Victor machines, the sale being made on what is technically known among knitting machine builders as a term lease, providing for the cash payment of a certain percentage of the value of the machines at the time of acceptance by the mill, said acceptance being based upon the satisfactory operation of the machines. On the 1st of April, 1901, Mr. Weierman made that first cash payment, thereby, it is alleged, acknowledging his satisfaction with the machines.

The next payment of the lease was due on Sept. 15th following. The American Knitting Machine Co. allege that on the 13th of that month they received notice from Mr. Weierman that the machines were unsatisfactory, and he declined to make the payment due on the 15th, and notified the Company that the machines must be removed from his mill, and that if they were not removed before a given date they would be stored at the expense of the Company. The American Knitting Machine Company felt that this action was unjustified, and brought suit against Mr. Weierman.

We are informed that the decision handed down by the judge about the middle of January in favor of the American Knitting Machine Co. was "Rule Absolute," which, we understand, is a legal term meaning that the answer of the defendant, Mr. Weierman, was not a sufficient defense, and the judge declined to send the case to a jury, rendering a verdict for full amount of suit with interest and cost.

Collections and Bankruptcy Claims.

H. Horace Dawson, 309 Mutual Life Building, Phila., Pa., is an attorney and counsellor at law who makes a specialty of collections. He solicits correspondence with parties having claims to be collected.

Alleged Patent Infringement.

Suit has been instituted in the United States Circuit Court for the Northern District of New York against the Fisher Knitting Machine Company and the Regal Textile Company of Utica by Scott & Williams of Philadelphia and Joseph W. North of Elizabeth, N. J., as owners of the Bellis patent of June 9, 1896, for a machine for making fleece-lined ribbed underwear. The result of the action will be awaited with much interest by the knit goods trade.

J. H. Hamilton & Co.

Attention is called to the complete line of bindings, webs, spool tapes and stay bindings carried by the Hamilton Mills, J. H. Hamilton & Co., 84 Franklin St., New York, and adapted for the use of knit goods, blanket and other textile uses. Messrs. Hamilton & Co. aim to keep their stock fully up to date and to hold themselves ready at all times to supply manufacturers promptly with these goods.

William B. Charles.

We desire to call the attention of manufacturers to the facilities of William B. Charles, Amsterdam, New York, for handling the waste products from their mills. He is prepared to make yearly contracts for the purchase of waste from mills or to buy stocks as they accumulate. His location in the knit goods district enables him to handle waste stock of any description. He also deals in cotton yarn for knitting or weaving, cotton cloth, silesia and sateens for the underwear trade.

Steam Meter.

The Meter advertised by G. C. St. John in this issue is the only device known to the market for measuring steam. It was developed by the necessities of the New York Steam Company, and is used by it in the sale of steam from its street mains. Fuller descriptions will be given upon application to Mr. St. John, at his office, 143 Liberty Street, New York.

Raw Hide Gears.

The New Process Raw Hide Company, Syracuse, N. Y., reports business as very good at the opening of the new year. The company is in receipt of an order from the British Westinghouse Elec. & Mfg. Co. for 60 of its new process noiseless pinions for the equipment of the British Company's new plant. These pinions are to be used on motors for driving machine tools, electric cranes, etc., and are for transmitting from 5 to 40 H. P. Orders from other sources are coming in fast and the outlook is promising for a good business year.

Worsted Finishing Compounds.

The Arabol Mfg. Co., New York, have recently placed on the market several new materials for the use of finishers of clay worsteds, cotton worsteds and worsted dress goods. These preparations have been tested with good results, and the Arabol Mfg. Co. invite correspondence in regard to them.

The Hartford Steam Boiler & Inspection Insurance Co. have a "Chamber of Horrors" at Hartford, in which are stored samples illustrating defects in steam boilers. This exhibition covers every kind of defect that can be represented by samples and has been in course of collection for the last 35 years.

Notes Among Western Mills.

I spent a week among the woolen mills of Indiana and Michigan, and found them all busy and the owners confident that the heavy weight season will open up well. The Danville Woolen Mills, Danville, Ill., are anxious to secure help to run their works day and night. They have a large Government order on hand which will keep them busy for some time to come. The Yount Woolen Mills Co., at Yountsville, Ind., have recently engaged the services of a new superintendent, R. P. Grant, formerly at Otto, N. Y. This plant makes their entire product into men's garments and the line that Mr. Grant has just got out is very creditable to all concerned, and everything looks now as though this mill was going to take a leading position in the business procession. The Turner Mfg. Co., at Peru, Ind., have made an assignment. They are running out the stock and getting everything in shape to close the plant until other arrangements can be made. The Clinton Woolen Mfg. Co., at Clinton, Mich., are running full and are well satisfied with last year's business, and have their heavy weight line about ready. They have an excellent line, and they do not need to fear any of the other fellows east or west. Mr. A. C. Huntington, the superintendent, is a bright, up-to-date manufacturer, and has an able assistant in Mr. Ed. Parker, who, by the way, looks after a large share of the work.

The woolen mill at Yale, Mich., is a very healthy looking institution, and the writer has every reason to know that in this instance appearances are not deceiving. This mill enjoys a good reputation on woolens, both plain and fancy, for men's wear. Messrs. Andrea & Sons have earned this reputation by strict attention to business and good management. This is one of the places that the writer always takes great pleasure in visiting. The Vassar Woolen Co., Vassar, Mich., is a thing of the past, all the machinery having been shipped to Tiffin, Ohio.

The city of Vassar offers to give a mill property to any person or persons who will put machinery in the building and operate it. The building is built of brick, substantial, convenient and suitable for a two-set mill or shoe factory, with plenty of good water, fuel, etc.

The Columbiaville Woolen Mills, Columbiaville, Mich., are very busy on a fine line of Meltons. Mr. Jacob Auel is superintendent and manager here, and informed the writer that they had all they could handle for some time to come. The woolen mills at Flint, Mich., are also busy. Mr. J. E. Shortle, as superintendent and manager of this plant, is working up quite a reputation for their product. Horner Brothers, at Eaton Rapids, Mich., are still keeping to the front in the yarn line. They have a model plant. Mr. Will Horner has charge of this up-to-date plant, and superintends the working of the mill in person. Mr. Charles Horner has charge of the office, and is the right man in the right place. Mr. E. Horner looks after the outside work, does the buying and selling, and is a bright, progressive business man. All of them deserve success.

I found the Michigan Central Woolen Co., at Centreville, Mich., shut down, making some needed improvements, but they were getting ready to start in full on the 27th. This plant is turning its entire attention to knit underwear. Since this new company has come into possession of the plant, with Mr. Donahue as superintendent, they have done a successful business, and the management seems well satisfied with the outlook. Mr. Frank Cummings is secretary and treasurer, and together with Mr. Donahue does the buying. They are fine people to do business with. Cooper, Wells & Co., at St. Joseph, Mich., are doing a good business in their line of knit goods. They have a new superintendent since the writer was there last, in the person of Mr. M. T. Murphy, a practical knitting mill man from the East, and it is said by parties in position to know, that the new superintendent has made some marked changes since he has taken charge of this plant, which are an advantage to all concerned. Cooper, Wells & Co. are among the most successful mills in the knitting line in the West.

I found the South Bend Woolen Co., South Bend, Ind., still very busy on light weights. Their line of heavy weights will soon be ready. I found the A. C. Staley Mfg. Co., at the same place, very busy on knit goods, and I understand they have sold their entire production for the coming season. The writer knew the mill back in the sixties, when it was a little one set concern, making stocking yarns, flannels, jeans, satinets and blankets, and now on the same site stands a fine 6-set plant, a credit to the town, and to the company that own and run it.

F.

Narrow Fabrics.

Wm. M. Young, 2421 Mascher Street, Philadelphia, is agent for the Hoffman Manufacturing Co., manufacturers of all kinds of woven narrow fabrics, including blanket binding, bed laces, etc. He is able to quote favorable prices and meet the wants of the trade as regards quality and delivery of goods. He invites correspondence from purchasers of goods in his line.

Severe Test for Paint.

The Joseph Dixon Crucible Co., Jersey City, N. J., give interesting information concerning the protective painting of the Union Railroad Bridge, which crosses the Monongahela River at Pittsburgh (Rankin), Pa.

The associate engineers were Messrs. Emil Swensson, Designer and Engineer of Construction, and Wm. H. Smith, Chief Engineer, Carnegie Steel Co. The total weight of this bridge is 5135 tons, and it has a total length of 2328 feet.

Designed for carrying molten metal from the Carrie Furnace to the steel mill and raw materials to the furnaces, this notable steel structure is subjected to heat from the molten metal, sulphur fumes from locomotives and river steamers, also from the adjoining furnaces and steel mills.

No other steel bridge in all the world is exposed to so many and severe destructive agencies. The best metal preservative was necessary, and the eminent engineers selected for its protection Dixon's Silica-Graphite Paint, as manufactured by the Joseph Dixon Crucible Company.

Inventor of the Stop Motion.

Credit for the original invention of the stop motion for weaving looms has lately been attributed to the late Charles Eastwood, but we learn from Mr. James Eccles, the textile machinery builder of Philadelphia, that his father, the late Samuel Eccles, of Manchester, Eng., was the original inventor of the stop motion, and that letters patent were granted to him on July 5th, 1838, other patents for improvements on the original device being granted five years later, in 1843. The late Samuel Eccles was well known to manufacturers of a generation ago as a builder of power looms, and an inventor of textile machinery.

Adulteration of Woolen Cloth.

Probably nowhere is pure wool so cheap as in Australia, nevertheless, loud complaints are being made against the extensive use of cotton and shoddy in so-called woolen goods. A correspondent in the "Sidney Mail" writes the following, which may be of interest to our readers in view of the complaints made here on the same score:—

The disuse, to a large extent, of the finer quality of wools for clothing and dress materials during the last 10 years has been the result not of the difficulty in obtaining the raw article, but of the demand by rich and poor alike for cheaper clothing. As an authority recently wrote:—"Changed conditions demand changed materials. Owing to changes in fashion the garments of today are 25 per cent. worse in quality than they were, aye, even 10 years ago.

"All this meant change in the quality of wool manufacturers had been used to consume, and it is on this very score that good, shafty, merino wool has grown so popular these last five to ten years." To this must be added that the enormous strides made in the improvement of machinery have enabled the manufacturer to turn out material to look as good as the best, and to wear well, at a considerably less cost. The fine broadcloth and the superfine dress material is still made but only to a small degree. But the wearer gets instead material that pleases the eye just as much as did the rich textures of the past. "What the eye does not see the pocket will not feel" is a subversion of the old adage that may fitly be applied in this case.

We often wonder why there should be such a great difference in price in two suits of clothes, looking very much alike both in texture and finish. If after wondering you are determined to look closer into the matter, you will find that while one consists of about 80 per cent. of wool, the other will not contain more than 20 per cent., and may contain less. The difference is in the cotton woven into the material, and this is so cunningly disguised that only a tradesman can discern it. In the past, when one took a piece of cloth in the hand, the weight, substance, and solidity of the material could be judged by weight. Today we may get the same solidity and weight, but we cannot depend on the substance and contexture of the material.

It happened only lately that two branches of the woolen trade, through their associations, had to take into serious consideration the filled and unfilled worsted coatings question. Certain manufacturers have for a long time past been adding chloride of zinc and other substances in order to secure weight to certain material which was not made of pure wool, and the practice, if continued, was calculated to do the pure worsted trade a serious injury.

The dyers say that some of their customers are to blame for it, as they demand this weighted material. A compromise has, however, been arrived at, which will be of benefit to the retail man, but in view of the scanty knowledge the public possess of the materials they wear, the benefit to the wearer of the material is extremely doubtful.

Australasia has made great strides in the manufacture of woolen materials, and as the raw article costs the local man less than the man who has to import, it enters more largely in the cloth turned out from the local works. New Zealand is the most forward in this, and its factories have turned out material equal to that of its kind made in England, but up to now no worsted yarn has been made in Australasia, and it has to be imported. This is on account of the special machinery required for spinning it—machinery that is very costly; and the likely demand for some time to come will not warrant the outlay. Thus the duty placed upon the yarn under the Federal tariff has been made by the framers without a knowledge of this fact. How far the tariff can keep out the adulterated woolen cloth is a matter for the future, and it is one that cannot be discussed at present.

—Mr. Robert Luce, president of the Press Clipping Bureau, has been appointed House chairman of the committee on election laws of the Massachusetts Legislature, which the newspapers of the State predict will perform perhaps the important task of the session in a reform of the caucus laws, involving the adoption in whole or in part of the Minnesota system of direct nomination and primary election.

—The Capron Knitting Mills of Utica, N. Y., are putting in some more of the improved vertical dryers manufactured by E. M. Antisdel, to increase their drying capacity.

—The Quincy Market Cold Storage Company of Boston have placed a contract with the Green Fuel Economizer Company for their well-known machines.

Wanted a Job.

In a recent issue of a Boston morning paper, a unique advertisement was noted. Among the "want" ads was one from a man desiring a position as second-class engineer. In it he said to prospective employers:

"I smoke, drink and tell the truth."

As odd things in advertisements are the order of the day and the delight of the public, perhaps his candor may win him a situation.

IN AND OUT OF THE MILL.

The Fall of the Pemberton Mill.

We of a later generation can scarcely realize the full horror of the fall of the Pemberton Mills, in 1860, and the conflagration which followed. That catastrophe is now historic, and nearly all of us have read or heard something of it. Perhaps no writer has paid sweeter tribute to the brave factory girls who perished in the flames than has Elizabeth Stuart Phelps in her "Chapters from a Life," and we are tempted to give her description here.

"One January evening we were forced to think about the Mills with curdling horror, which no one living in that locality when the tragedy happened will forget.

"At five o'clock, the Pemberton Mills, all hands being at the time on duty, without a warning of the catastrophe, sank to the ground.

"At the erection of the factory a pillar with a defective core had passed careless inspectors. In technical language, the core had "floated" an eighth of an inch from its position. The weak spot in the too thin wall of the pillar had bided its time and yielded.

"The roof, the walls, the machinery fell upon seven hundred and fifty living men and women, and buried them. Most of these were rescued; but eighty-eight were killed. As the night came on, the watchers who could not join the rescuing parties saw a strange and fearful light in the north. Where we were used to watching the beautiful belt of the lighted mills ablaze, a zone of laughing fire from east to west upon the horizon bar,—a red and awful glare went up. The mill had taken fire. A lantern, overturned in the hands of a man who was groping to save an imprisoned life, had flashed to the cotton, or the wool, or the oil with which the ruins were saturated. One of the historic conflagrations of New England resulted.

"With blanching cheeks we listened to the whispers that told us how the mill-girls, caught in the ruins beyond hope of escape, began to sing. They were used to singing at their looms,—mill-girls always are,—and their young souls took courage from the familiar sound of one another's voices. They sang the hymns and songs which they had learned in the schools and churches. No classical strains, no 'music for music's sake' ascended from that furnace; no ditty of love or frolic; but the plain, religious outcries of the people: 'Heaven is my home,' 'Jesus, lover of my soul' and 'Shall we gather at the river?' Voice after voice dropped. The fire raced on. A few brave girls sang still,—

" 'Shall we gather at the river,
There to walk and worship ever?'

"But the startled Merrimac rolled by, red as blood beneath the glare of the burning mills, and it was left to the fire and the river to finish the chorus."

In the Light.

Whatever you do, or think, or say, you are constantly revealing your true self. Without intending to, you are spreading a knowledge of your character and of your past among those with whom you mingle. You are each day unrolling a page of your life for the world to read. All that you do makes its mark upon you, physically and mentally. You cannot, if you would, hide the story of your thoughts and acts. Life is expression, and we can only express what we are. Even though the tongue should lie, and the heart seek to deceive, the eye cannot be trained to falsify. Try as we will to wear masks, to pass for that which we are not, the truth within is perpetually struggling to express itself and will shine through every disguise.—James Lincoln Brooks in Success.

Maxims.

Max O'Reill, ever the gallant champion of the ladies, gives the following Maxims to be observed when in love. He also has something to say on the subject of proposals. If his advice is followed, there ought to be a decrease in the number of old maids, and 'twill be a wary man who is not caught in the matrimonial snare

"You love for yourself," says Mr. O'Reill, "and if you marry you seal the destiny, happy or wretched, of your own life. Therefore, never marry for others."

(He might add that it's risky enough when you do marry to please yourself.)

"Be careful; do not imagine you are in love before you have tried all the tests which may convince you that you really are. You may be only too liable to mistake a caprice, a fancy, a romantic day-dream for true love.

"First love is seldom true love. A whole series of light fancies, which have been mistaken for love, have often been followed by the earnest passion of a life.

"The credulity of women on the subject of being loved is very great. They often mistake a little admiration for a particular regard, and on this foundation build up a castle in the air and fill it with all the treasures of their brightest hopes. It is safer to be very sceptical on the subject of being loved; but if you do make the mistake, take all the blame to yourself and save your dignity by secrecy, if you cannot keep your heart from loving.

"Men will always be polite, attentive, complimentary and paying you all sorts of little flatteries, both of words and actions. Accept them quietly and calmly, as your right, but never seem to give them more weight than in nine cases out of ten they have.

"When you feel perfectly sure that you love a man, there are many subtle ways to let him know it."

Now, girls, here's your chance.

"I have always failed to understand why women should not choose their husbands, and why only unmarried reigning queens should do so. I do not see why women should not propose. Of course they should do so in a manner quite different from that in which men propose."

Mr. O'Reill stops at the most interesting point and fails to tell what tactics

efforts were rewarded by a big sale, the girls should employ in popping the question. Should the far-famed "goo-goo" eye play an important part, or should the matter be approached in a more direct and business-like way?

Until some damsel has tried and reports as to the success of her venture, the question will be undecided.

He Was Not a Stockholder.

Many persons who travel on the crowded street cars will sympathize with the Chicago man with a standing grievance.

This particular passenger felt that patience had ceased to be a virtue, and went to headquarters to express his sentiments in vigorous terms.

"Who are you, that you come to us and talk like that?" asked an officer of the corporation. "Are you one of the stockholders?"

"No, sir!" thundered the irate passenger, "I'm one of the strap holders!"

"Some women wish that they were men,
But there are more, I must aver,
Ne'er harbor such a thought—but then,
They often wish their husbands were."

Mules in the Mill.

A new and inexperienced inspector was recently sent to inspect a certain mill. Among the instructions given him was a caution to inspect the mules. He dutifully went through the buildings, and then inquired for the stables. The employee whom he questioned looked surprised, and remarked that there were no stables.

"Then where do you keep the mules?" asked the green inspector.

How Careless.

He asked his love to marry him,
By letter she replied:
He read her firm refusal,
Then shot himself and died.

He might have been alive today,
And she his happy bride,
If he had read the postscript
Upon the other side.
—Cicely Cinnarion in Smart Set.

He Holds the Key.

A New York newsboy who had early learned that opportunity is not a thing to be passed without snatching, was a pathetic as well as amusing feature of the recent dynamite explosion in New York. Less than an hour after the explosion had occurred, the little chap appeared upon the scene, his head bandaged, his face marked by contact with broken glass, one arm in a sling, and with a decided limp.

He had been in the immediate vicinity of the explosion, and obviously had felt its effects. He realized that there would be a great demand for extras, and bandaging up his wounds as best he could, appeared on the scene of action well supplied with papers. His appearance attracted the attention of buyers, and his When asked why he did not go to the hospital, he simply waved his papers at his questioners and yelled, "Extry! All about the big 'xplosion!" and scorned to think of hospitals to the exclusion of business.

Perseverance in the face of misfortune is the key to success, and this small gamin evidently holds the key.

The Mill Boarding House.

"The early bird catches the worm," so runs the old proverb. Likewise, the ingenious boarder gets the pie.

The boarding house of a certain mill village is kept by a thrifty landlady who like Barkis was "a little near," and cannot be accused of giving her boarders indigestion by allowing them to overeat.

One slim wedge of pie was the allowance per capita, and that devoured, the meal was ended.

Venturesome indeed would be he who dared, like Oliver Twist, to ask for more.

One day an enterprising weaver quietly appropriated his neighbor's pie while the rightful owner was still engaged in dissecting an india rubber-like piece of meat. The landlady espied him eating pie and did not bring his piece. When he had finished, he concealed the plate, and looking innocently at the landlady, inquired for his pie.

"Why, I thought I saw you eating your pie," she answered.

"Oh, no, you are mistaken; I haven't eaten my pie," he rejoined, and the mystified landlady was forced to supply him with another piece. After he had eaten the second portion, and was leaving the room, he said:

'By the way, that first pie was Jim's. He hasn't had any."

As she was obliged to make the loss good to "Jim," who had been robbed, for once her calculations went astray.

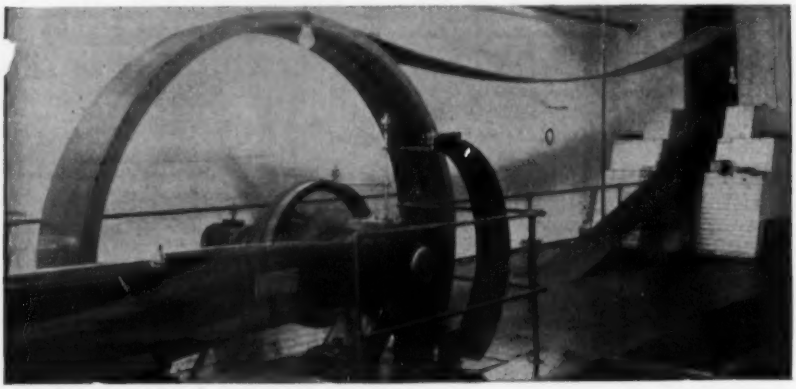
More Than He Bargained For.

The following anecdote comes from a New Jersey mill:—

A little chap who gave his age as that required by law to admit of his going to work, but who looked only ten years old at most, was engaged in some light occupation about the buildings. But for his puny size, he was well equipped for a pugilist, having pluck, courage and plenty of fight in him. His great delight was to drag everyone into a "scrap." One day his eye fell on an employee, a woman of particularly bony and angular build. Advancing toward her with the air of a bantam rooster ready for war, he invited her to box. Drawing off, he hit from the shoulder, expecting only feminine expostulation, or at most a cuff on the ear, as usual when he attacked the girls. Instead, he got a good thump, also straight from the shoulder, with the hard, bony fist of his opponent. The little fellow stood with gaping mouth, looking in surprise at the woman, who had good-naturedly taught him a lesson. Then, blinking back the tears which the stinging blow brought to his eyes, and still unwilling to admit any superior strength on her part, he lisped:

"It ain't because you're so smart, you hurt; it's because your bones are so near the surface!"

This sounds like some of the explanations made by older pugilists as to why their opponents succeeded in giving them the worst of it.



ANOTHER BELT FULL OF CLING-SURFACE.

Here is the Photograph and the Letter.

You can try Cling-Surface, paying only if satisfactory.

What better proof can you ask ?

We guarantee it will stop belt slipping, allow easy belts, increase transmitting efficiency, and preserve the belts.

Its worth a trial at our risk?

CLING-SURFACE MFG. CO.,

199-205 Virginia St., BUFFALO, N. Y.

NEW YORK, 39-41 Cortlandt St. BOSTON, 170 Summer St.

VALLEY WOOLEN MILL.

CHERRY VALLEY, MASS., Dec, 19, 1901.

Cling-Surface Mfg. Co.,
New England Branch,
Boston, Mass.

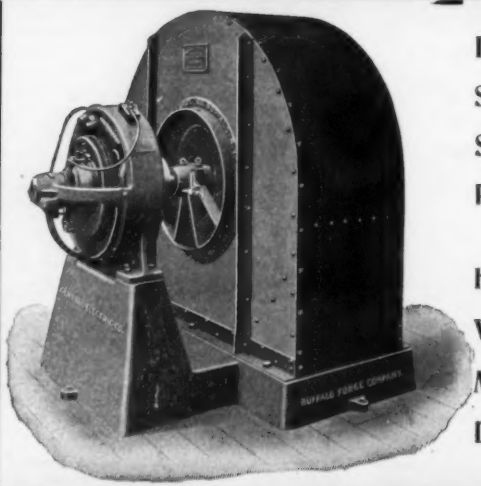
Dear Sirs :—

We have been using your Cling-Surface for about a year and are much pleased and satisfied with its results. If applied right belts will be in fine condition and give much greater efficiency in power whenever used.

We are as much pleased with its working in our card-room as in our engine room, and the picture of the latter shows what it is doing for us there. Very truly yours,

CHANNING SMITH, Prop.

Buffalo Forge Company Buffalo



Buffalo
Steel Plate Fans
Steam,
Pulley, Electric,
FOR
Heating,
Ventilating, Drying,
Mechanical
Draft, etc.

Buffalo Forge Company Buffalo

BUYERS' INDEX.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

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Air Moistening System.
American Moistening Co., 150 Devonshire St., Boston.

Architects and Mill Engineers.
Ferguson, John W., Paterson, N. J.
Gray, Arthur F., Exchange Bldg., Boston.
Praray, C. A. M. & Co., Banigan Bldg., Providence, R. I.

Attorney-at-Law.
Dawson, H. Horace, 309 Mutual Life Bldg., Philadelphia, Pa.

Automatic Feeds for Cotton and Wool.
Atlas Foundry & Mch. Co., Newark, N. J.
Philadelphia Dyeing Machinery Co., 6721 Germantown Ave., Phila., Pa.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Baling Machine.
Torrance Mfg. Co, 18 Davis St, E. Newark, N. J.

Bandings.
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Bands and Labels.
Docker-Foster Co., Phila., Pa.

Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.

Belting.
Alexander Bros., 410 No. 3d St., Phila., Pa.
Boston Belting Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.
Jeffrey Manufacturing Co., Columbus, Ohio.
Link Belt Machinery Co., Chicago, Ill.
Main Belting Co, 1219 Carpenter St, Phila.
Popham, Henry, & Son, Newark, New Jersey.
Shultz Belting Co., St. Louis, Mo.
Smith, Jas. Woolen Mach. Co., Phila, Pa.
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Belt Dressing.
Alexander Bros, 410 No. 3d St, Phila, Pa.
Cling Surface Mfg. Co., 168 Virginia St., Buffalo, N. Y.
Main Belting Co, 1219 Carpenter St, Phila.
Stephenson Mfg. Co., Albany, N. Y.

Belt Hooks.
Bristol Co., Waterbury, Ct.
Thatcher Belting Hook Co., Cleveland, O.

Belt Lacing Machine.
Diamond Drill & Machine Co., Walnut St, Birdsboro, Pa.

Bindings.
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Bleaching Materials.
Bosson & Lane, Boston.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Block Cutting for Printing.
Atlas Copper Stamp Works, 15 Whitehall St., New York.

Blowers, and Blower Systems.
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
The Sterling Blower & Pipe Mfg. Co., 44 Huyshope St, Hartford, Conn.
Sturtevant, B. F. Co., Boston, Mass.

Bobbins, Spools, Shuttles, Etc.
McGuire, John A, Co, Claremont, N. H.
Murray, C. O., Nashua, N. H
Southern Bobbin Co., Greensboro, N. C.
Sweet & Doyle, Cohoes, N. Y.
Tebbets, Ed L., & Co., Locke's Mill, Me.

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Boxes, Cloth Boards, Etc.
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Rice, T. B., Mifflin St. Wharf, Phila.

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Braiding Machinery.
New England Butt Co., Providence, R. I
Textile Machine Works, Reading, Pa.

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Brass (Perforated.)
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Brushes.
Felton, S. A. & Son Co., Manchester, N. H.
Parks & Woolson Mach. Co., Springfield, Vt.

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Burr Pickers.
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Curtis & Marble Machine Co., Worcester Mass.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Calculating Apparatus.
Pennsylvania-Eastern Syndicate, Bourse Building, Philadelphia, Pa.

Calico Printers' Machinery and Supplies.
Arlington Machine Works, (Arthur Birch) Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
Butterworth, H. W., Sons & Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Phillips Co, The Thomas, Providence, R. I.
Taunton New Bedford Copper Co., New Bedford, Mass.
Rusden Machine Co., Warren, R. I.
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Canvas Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.

Carbonizing.
Riverdale Woolen Co., Northbridge, Mass.

Carbonizing Machinery.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Card Clothing.
Ashworth, Elijah, Fall River, Mass.
Booth, Benj. & Co., Philadelphia.
Edma Card Clothing Co, 422 S. 5th St, Camden, N. J.
Leigh, Evan A, 35 Mason Building, Boston

Card Grinding Machinery.
Hardy Machine Co., Biddeford, Me.
Smith, Jas. Woolen Machinery Co., Phila.

Carders' Tools.
Brown, W. H, Mechanic St, Worcester Mass.

Carpet Machinery.
Altemus, W. W. & Son, 2816 N. 4th St, Phila. Pa.
Curtis & Marble Machine Co, Worcester, Ms.
Furbush, M. A. & Son, Machine Co, Phila, Pa.
Granger Foundry & Machine Co., Providence, R. I.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa.
Parks & Woolson Mach. Co., Springfield, Vt.
Smith, Jas. Woolen Machinery Co., Phila.

Chemicals and Apparatus.
Fiedt, Geo. D. & Co, 528 Arch St, Phila, Pa.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Cigars.
Taylor & Stinson, 1227 Jackson St., Philadelphia, Pa.

Cling Surface.
Cling Surface Mfg. Co., Buffalo, N. Y.

Clocks.
Howard, E. Clock Co., 403 Washington St., Boston, Mass., 41 Maiden Lane, New York.

Cloth Boards.
Chaffee Bros., Oxford, Mass.
Rice, T. B., Mifflin St. Wharf, Phila.

Clutches.
American Tool & Machine Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., The, New Haven, Conn.
Hunter, James, Machine Co., North Adams, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Smith, T. H., Cotton Mill, Jamestown, N.Y.

Combs (Wool and Cotton).
Crabb, William, & Co, Newark, N. J.
Townsend, Thomas, 157 Orange St., Providence, R. I.

Commission Merchants (Dry Goods, Knit Goods).
Charleston Export & Commission Co., Charleston, S. C.

Conveying Machinery and Chains.
Jeffrey Manufacturing Co., Columbus, O.
Link Belt Machinery Co., Chicago, Ill
The Sterling Blower & Pipe Mfg. Co., Hartford, Conn.

Cop Tubes.
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Copper Gaskets.
U. S. Mineral Wool Co., 140 Liberty St., New York.

Copper (Perforated.)
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Copper Print Rollers.
Phillips Co, The Thomas, Providence, R. I.
Taunton New Bedford Copper Co, New Bedford, Mass.

Copper Work for Dyers.
Butterworth, H. W. & Sons Co., Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
Phillips Co, The Thomas, Providence, R. I.

Cotton.
Blaisdell, Jr, Co., S., Chicopee, Mass.
Charles, W. B., Amsterdam, N. Y.

Cotton Elevators.
Buffalo Forge Co., Buffalo, N. Y.
Link Belt Machinery Co., Chicago Ill.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.

Cotton Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila. Pa.
Ashworth, Elijah, Fall River, Mass.
Atherton, A. T., Machine Co., Pawtucket, R. I.
Barber & Colman, 11 Pemberton Sq., Boston.
Butterworth, H. W. & Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Eccles, James, 2424 Amber St., Philadelphia, Pa.
Fairmount Machine Co, 22d and Wood Sts, Philadelphia.
Houghton, L. T. & Sons, Worcester, Mass.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kilburn, Lincoln & Co, Fall River, Mass.
Kitson Machine Co., Lowell, Mass.
Leigh, Evan A, 35 Mason Building, Boston.
Lever, Oswald, Lehigh Ave. and Masher St., Philadelphia.
Lowe, Stephen C., 186 Devonshire St., Boston, Agt. John Hetherington & Sons, Ltd.
Lowell Machine Shop. Lowell, Mass.
Mason Machine Works, Taunton, Mass.
McKerrow, H. G, Boston, Mass.
Parks & Woolson Mach. Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
Schofield, Geo. L., Philadelphia.
Smith, Jas. Woolen Machinery Co., Phila.
Stafford, G. W. Mfg. Co., Readville, Mass.
Whitin Machine Wks, Whitinsville, Mass.

Cotton Openers and Lappers.
Atherton, A. T., Machine Co., Pawtucket R. I.
Kitson Machine Co, Lowell, Mass.
Howard & Bullough American Machine Co, Pawtucket, R. I.

Cotton Softeners.
Bosson & Lane, Boston, Mass.

Cotton Waste.
Blaisdell, Jr., Co., S., Chicopee, Mass.
Becker, C. W Agt, Amsterdam, N. Y.
Charles, W. B., Amsterdam, N. Y.

Credits.
National Mercantile Agency, New York and Boston.

Cutters for Knit Fabrics.
Goodwin, J. C., Diamond and Second Sts., Phila., Pa.
Kennedy, Thos. (Cutters, etc.,) Cohoes, N. Y.

Dextrine.
Stein, Hirsh & Co, 165 Duane St., New York.

Dryers.
American Blower Co., Detroit.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Hunter, Jas., Machine Co., No. Adams Mass.
Kenyon, D. R. & Son., Raritan, N. J.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co, Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I
Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co., 34 Oliver St., Boston, Mass.

Dusters.
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Dust Collectors.
Allington & Curtis Mfg. Co., Saginaw, Mich.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
The Sterling Blower & Pipe Mfg. Co., 44 Huyshope St, Hartford, Conn.

Dyers, Bleachers and Finishers
American Yarn Printing Works, 134-180 North 22d St., Philadelphia.
Barnesville Mfg. Co., Barnesville, Ga.
Brophy's, T, Sons, Jasper St, Philadelphia
Cohoes Dye Works, Cohoes, N. Y.
Cranston Worsted Mills (yarns), Bristol, R. I.
Davidson & Brooke, 2560 No. 3rd St., Philadelphia.
Duncan & Baillie, Cohoes, N. Y.
Firth & Foster Co., Kensington, Pa.
Franklin Bleaching & Finishing Works, Ltd., 70th St., and Haverford Ave., Phila.
Greenwood, R. & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket and Valley Falls, R. I.
Lorimers, The Wm. H. & Sons Co., Phila.
Molt Bros., Millbury, Mass. (Indigo Blue.)
Pawtucket Dyeing & Bleaching Co, Pawtucket, R. I.
Pennypack Yarn Finishing Co., Holmesburg Pa
Pond Lily Co., New Haven, Ct.
Providence Mills Mfg. Co., 55 Girard Ave., Philadelphia, Pa.
Rowland, Samuel, Schuylkill Haven, Pa.

Silver Spring Bleaching Co, Manayunk, Pa.
U S. Finishing Co., New York.
Warren, W, Thread Works, Westfield, Mass.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Dyeing, Drying, Bleaching and Finishing Machinery.
American Blower Co., Detroit.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Antisdel, E. M., 12 Miller St., Utica, N. Y., (Knit Dryer.)
Birch Bros. (Albert Birch), Somerville, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W, & Sons Co Phila Pa.
Curtis & Marble Machine Co, Worcester, Mass.
Delahunty Dyeing Machine Co., Pittston, Pa.
Dubois, A. N., 2170 Sedgely Ave., Philadelphia, Pa. (Black for Hosiery.)
Eccles, James, 2124 Amber St., Philadelphia, Pa.
Fairmount Machine Co, 22 and Wood Sts, Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St, Philadelphia, Pa.
Kenyon, D. R. & Son, Raritan, N. J.
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Philadelphia Textile Specialty Co., 500 North 12th St., Phila.
Phillips, The Thomas Co, 91-95 South Main St, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass. (Drying.)

Dye House Cans.
Hill, James Mfg. Co., Providence, R. I.

Dye Sticks,
Bailey, Frank, Cedar Brook, New Jersey.
Haedrich, E. M, Philadelphia, Pa.

Dyestuffs and Chemicals.
Atteaux, F. E. & Co., 174-176 Purchase St., Boston.
Berlin Aniline Works, 72 Front St., N. Y.
Bischoff, & Co, 87 Park Place, N. Y.
Bosson & Lane, 36 Central Wharf, Boston.
Calmore & Co., 501 Chestnut St, Phila.
Corey, S. J, 273 Congress St, Boston
Cassella Color Co., 182 Front St., New York.
Dillon & Co. 20 Cedar St, New York.
Dubois, A. N., 2170 Sedgely Ave., Phila., Pa.
Farbenfabriken of Elberfeld Co, 40 Stone St, N. Y.
Fortner, L. B., 36 Strawberry St., Phila.
Geisenheimer & Co, 189 Front St, New York.
Holliday & Sons, Ltd., Read, 7 Platt St., New York.
Janney, O. S, & Co, Phila. and Boston.
Johnson, Chas. A, & Co, 22 Dey St, N. Y
Keller, John J, & Co, 104-106 Murray St, N. Y.
Klipstein, A, & Co, 122 Pearl St, N. Y.
Koechl, Victor, & Co. 122 Hudson St, N. Y.
Kuttroff, Pickhardt & Co., New York.
Molt Bros., Millbury, Mass. (Indigo Blue.)
N. Y. & Boston Dyewood Co, 55 Beekman St, New York.
Oil Seeds Pressing Co., 15-25 Whitehall St., New York.
Roessler & Hasslacher Chemical Co, 100 William St., New York.
Schoellkopf Hartford & Hanna Co., Philadelphia, N. Y. and Boston.
Sharpless Dye Wood Ext. Co, The Bourse, Phila, Pa.
Stamford Mfg. Co, 133-137 Front St., N. Y.
Sykes & Street, 85 Water St, N. Y.
Thayer, Ed. M., 106 Broad St., Boston, Mass.
United Indigo & Chemical Co., Ltd., 176 Federal St., Boston.
Vila, H S., 115 So 2nd St., Philadelphia, Pa.

Dynamos.
General Electric Co., 44 Broad St., New York
Sturtevant, Co., B. F. Boston.

Edgings.
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Electrotyping and Printing.
Whitcomb, H. C, & Co, Boston.

Elevators.
Cohoes Foundry & Machine Co, Cohoes, N.Y.
Eastern Machinery Co, The, New Haven Conn.
Jeffrey Manufacturing Co., Columbus, O.
Howard, Geo. C., Lansdowne, Pa and 2123 Market St, Philadelphia, Pa.

Electrical Construction.
General Electric Co., 44 Broad St., New York.

Electric Fans.
American Blower Co., Detroit.
Buffalo Forge Co., Buffalo, N. Y.
General Electric Co., 44 Broad St., New York.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila., Pa
Sturtevant Co., B. F., Boston.

Electric Lighting.
General Electric Co., 44 Broad St., New York.

Electric Motors.
General Electric Co., 44 Broad St., New York.
Sturtevant Co., B. F., Boston.

Enamel Goods and Supplies.
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Engineers, Mechanical.
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Exhaust Heads.
Burt Manufacturing Co., Akron, Ohio.
The Sterling Blower & Pipe Mfg, Co., 44 Hupshope St, Hartford, Conn.

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Feed Water Heaters.
Green Fuel Economizer Co., Matteawan N. Y.
Scaife, W B. & Sons, Pittsburg, Pa.

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Goulds Mfg. Co, Seneca Falls, N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.

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Filters.
Scaife, W. B. & Sons, Pittsburg, Pa.

Finishing Machinery.
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Fluted Rolls.
Cohoes Foundry & Machine Co, Cohoes, N.Y
Thurston, A. G, & Son, Box 528, Fall River Mass.

Forges.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co, B. F., Boston.

Friction Clutches.
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Friction Hoisting Drums.
Eastern Machinery Co., New Haven, Conn.

Fuel Economizers.
Green Fuel Economizer Co., Matteawan, N. Y.
Steam Boiler Equipment Co., 20 West Houston St., New York.

Fulling Mills for Woolen Goods.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter Jas, Machine Co, No. Adams, Mass.
Kenyon, D. R. & Son, Raritan, N. J.

Garnetts.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Gas Engines.
Jones, Lewis, 60½ and Media Sts, Phila, Pa.

Gas Exhausters.
Sturtevant Co., B. F., Boston.

Gears.
New Process Raw Hide Co., Syracuse, N. Y.

Gear Cutting Machine.
Whiton, The D. E, Co, New London, Conn.

Generating Sets.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F, Boston.

Grate Bars.
U. S. Rocking Grate Bar Co., Elizabeth, N.J.
Guides.
Hartson, L. M. Co., North Windham, Conn.
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Heddles.
Leisenring, John, Mfg. Co., Philadelphia, Pa.
Steel-Heddle Mfg. Co., 1842 Germantown Ave., Phila,
Watson, L. S, Mfg. Co, Leicester, Mass.
Hoisting Machinery.
Larrabee, John E., Amsterdam, N. Y.
The Eastern Machinery Co., New Haven, Conn.
Hose.
Boston Belting Co., Boston.
Hosiery Labels.
Docker, Foster Co., Philadelphia, Pa.
Saranac Electrical Mfg. Co., St. Joseph, Mich.
Hosiery Boards.
Pearson, J. T, Kensington, Pa.
Humidifying Apparatus.
American Air Moistening Co., Boston.
Hydro Extractors.
American Tool & Machine Co , Boston.
Rusden Machine Co., Warren, R. I.
Ironing Machines for Knit Goods.
Craw, J. W Laundry Machinery Co., So. Norwalk, Conn
Jacquard Cards.
Rogers, H. E, South Manchester, Conn.
Key Seaters.
Leisenring Mfg. Co., Philadelphia, Pa.
Knit Goods Edgings, Trimmings, etc.
Cathcart, John & Co., 115 Franklin St., New York.
Chapin, Geo. W. Philadelphia, Pa.
Charles, W, B., Amsterdam, N. Y.
Cheney Bros, Silk Goods, 479 Broome St, N. Y.
Friedberger Mfg Co, Edgings, Germantown, Phila, Pa.
Hepner & Horwitz, Lacings, 30 Howard St, N. Y.
Krout & Fite Mfg. Co, Allegheny Ave. and Emerald St., Phila.
Weimar Bros, 1817 East York St, Phila. Pa.
Knit Goods Finishing Machines, Crochet, Etc.
Craw, J. W. Laundry Machinery Co., So. Norwalk, Conn.
Industrial Mfg. Co., Camden, N J.
Merrow Machine Co, The, Hartford, Conn.
Nye & Tredick, 606 Arch St, Phila, Pa.
Scott & Williams, 2079 E. Cumberland St, Phila Pa.
Willcox & Gibbs Sewing Mch. Co., New York.
Knitting Machine Cylinders.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Stafford & Holt, Little Falls, N. Y.
Knitting Machinery.
American Knitting Machine Co., 6th and Arch St. Philadelphia Pa.
Antisdel, E. M., 12 Miller St., Utica, N Y.
Beattie, Wm. & Son, Cohoes, N. Y.
Branson Machine Co., 506 N. American St., Philadelphia.
Brinton, H. & Co., 213 Race St., Philadelphia Pa.
Cooper, Chas, Bennington, Vt.
Crane Mfg. Co. Lakeport, N. H.
Excelsior Knitting Machine Manufacturing Co., Allentown, Pa.
Goodwin, J. C. Second and Diamond Sts., Phila., Pa. (Cutters.)
Jenckes, E. Mfg. Co, Pawtucket, R. I.
Jones, Lewis, 60 1-2 and Media Sts, Philadelphia, Pa.
Kennedy, Thos. (Cutters, etc.), Cohoes, N. Y
Keystone Knitting Machine Mfg. Co., 40 N 7th St., Phila.
Lamb Knitting Mach. Mfg. Co., Chicopee Falls, Mass.
Leighton Machine Co, Manchester, N. H.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
McMichael & Wildman Mfg. Co, Norristown, Pa.
Mueller, Arthur, 760 Lexington Avenue., Brooklyn, N. Y.
Nye & Tredick, 606 Arch St, Phila, Pa.
Paxton & O'Neill, 127 Bread St, Phila, Pa.
Pepper Mch. Works, Lakeport, N. H.
Ruth & Co., Norristown, Pa.
Scott & Williams, 2079 E. Cumberland St., Phila., Pa.
Snyder, Homer P. Mfg. Co., Little Falls, N. Y.
Stafford & Holt, Little Falls, N. Y.
Taylor, James, 835 Arch St., Philadelphia.
Tompkins Bros., Troy, N. Y.
Knitting Needles and Supplies.
Breedon, Wm. & Son, Amsterdam, N. Y.
Brinton, H. & Co., 213 Race St., Philadelphia, Pa.
Cooper, Chas, Bennington, Vt.
Corey, Wm, Co, Manchester, N. H.
Crane Mfg. Co., Lakeport, N. H.
Dodge Needle Co., Manchester, N. H.
Ives, Loyal T, New Brunswick, N. J.
Keystone Knitting Machine Mfg. Co., 40 N 7th St., Philadelphia.
Lamb Knitting Machine Mfg. Co., Chicopee Falls, Mass.
Manufacturers' Supplies Co., 66 No. 4th St. Philadelphia.
Mayo Knitting Machine & Needle Co Franklin, N. H.
Page Needle Co , Chicopee Falls, Mass.
Treat, Orion, Manchester Green, Conn.
Wardwell Needle Co, Lakeport, N. H.
Knotter for Spoolers.
Barber & Colman, 11 Pemberton Sq., Boston.
Labeling Machine.
Saranac Electrical Mfg. Co., St. Joseph, Mich.
Laboratory Outfits.
Feidt, Geo. D. & Co, 528 Arch St. Phila, Pa.
Leather Boards.
Rogers, H. E, South Manchester, Conn.
Lightning Apparatus.
Pennsylvania Eastern Syndicate, Bourse Building, Philadelphia, Pa.
Looms.
Draper Company, Hopedale, Mass.
Fairmount Machine Works, 22d and Wood Sts. Philadelphia.
Furbush, M. A, & Son Co, Phila, Pa.
Howard, Geo, C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa. (For wire.)
Kilburn, Lincoln & Co, Fall River, Mass
Leigh, Evan A., 35 Mason Bldg., Boston.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Stafford, G. W. Mfg. Co , Readville, Mass.
Whitin Machine Works, Whitinsville, Ms,
Loom Harnesses.
Jeffrey Loom Harness Co, The Henry, Woonsocket, R. I.
Leisenring, John, Mfg. Co., Philadelphia, Pa.
Loom Pickers.
Loom Picker Co., Biddeford, Me.
Lubricators
Dixon, Jos., Crucible Co, Jersey City, N. J.
Lumber.
Stearns, A. T, Lumber Co, Neponset, Mass.
Lumpers.
Gerry, George, & Son, Athol, Mass.
Machinery Dealers.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Schofield, Geo. L. Phila., Pa.
Taylor, James, 835 Arch St., Philadelphia.
Machinists' Tools.
Dodge Mfg Co., Mishawaka, Ind.
Leisenring Mfg Co., Philadelphia, Pa
Whiton, The D. E. Co, New London, Conn.
Mails.
Walder, J, Paterson, N. J.
Measuring and Folding Machines.
Curtis & Marble Machine Co, Worcester, Ms.
Elliott & Hall, 544 Hermon St, Worcester, Mass
Fabric Measuring & Packaging Co., Postal Telegraph Bldg , New York.
Parks & Woolson Mach. Co., Springfield Vt.
Mechanical Draft.
American Blower Co., Detroit.

Buffalo Forge Co., Buffalo, N. Y.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.
Sturtevant Co., B. F., Boston.

Mercerizing Machinery.
Butterworth, H. W. & Sons, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.
Philadelphia Textile Specialty Co., 500 North 12th St., Phila.
Rusden Machine Co., Warren, R. I.

Mill Architects.
See Architects & Mill Engineers.

Mill Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.

Mill Brushes.
See Brushes.

Mill Builders and Engineers.
Ferguson, John W, Paterson, N. J.

Mill Supplies.
American Supply Co, Providence, R. I.
Bamford & Smith, Pascoag, R. I.
Bristol, The, Co., Waterbury, Conn.
Buckley's, Benj. Son, Gun Mill, Paterson, N. J.
Carpenter, Geo. B. & Co., Chicago, Ill.
Chase Pulley Co., Providence, R. I.
Dixon Lubricating Saddle Co., Bristol, R.I
Dodge Mfg. Co., Mishawaka, Ind.
Douglas, R. D., Fall River, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Hartson, L. M. Co., North Windham, Conn.
Hoag, A. W. & Co., Reading, Pa.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Jeffrey Manufacturing Co., Columbus, O.
Lane, W. T. & Bro., Port Chester, N. Y.
Larrabee, John E., Amsterdam, N. Y.
Leisenring, John Mfg Co., Phila., Pa.
Main Belting Co, 1219 Carpenter St, Phila.
National Supply Co., Paterson, N. J.
Oil Seeds Pressing Co., 15-25 Whitehall St., New York.
Shaw, Victor, Ring Traveller Co., Providence, R. I.
Smith, Jas. Woolen Machinery Co., Phila.
Southern Bobbin Co., Greensboro, N. C.
Steel-Heddle Mfg. Co., 1842 Germantown Ave. Phila.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.
Sweet & Doyle, Cohoes, N. Y
Thatcher Belting Hook Co., Cleveland, O.
Thurston, A. G, & Son, Fall River, Mass.
Watson, L. S, Mfg.Co, Leicester, Mass.

Napping Machines.
Columbia Napping Machine Co., Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Jones, Lewis, 60 1-2 and Media Sts., Philadelphia, Pa.
Parks & Woolson Mach. Co., Springfield, Vt.

Noils (Silk.)
Ryle, Wm. & Co., 54 Howard St., N. Y.
Malcolm Mills Co., Frankford, Pa.

Oil Filters.
Burt Manufacturing Co., Akron, Ohio.

Oils.
Oil Seeds Pressing Co., 15-25 Whitehall St., New York.

Oilless Bearings.
Arguto Oilless Bearing Co, Wayne Junction, Phila.

Oxidizing Machinery.
Hoag, A. W. & Co., Reading, Pa.

Packing.
Boston Belting Co, Boston.
Jenkins Bros., New York.

Pantagraphs for Mill Engraving.
Johnson, C. A, & Co, 22 Dey St, New York.

Paper Tubes.
Douglas, R. D., Fall River, Mass.

Patent Solicitors.
Crosby & Gregory, 34 School St, Boston, Mass.
Siggers, E. G., Washington D. C.
Wolhaupter, D. P., Equitable Bldg., Washton, D. C.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co., 100 William St, New York.

Picker Sticks.
Southern Bobbin Co., Greensboro, N. C.

Pipe Covering.
Keasbey, R. A, 83 Warren St, New York.

Pneumatic Conveying.
See Ventilating.

Portable Hoists.
Larrabee, John E., Amsterdam, N. Y.

Power Transmitting Machinery.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
Carpenter, Geo. B. & Co., Chicago, Ill.
Chase Pulley Co., Providence, R. I.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co, New Haven, Conn.
Fairmount Machine Works, 23d and Wood Sts, Philadelphia.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St, Philadelphia, Pa.
Hoag, A. W. & Co., Reading, Pa.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jeffrey Manufacturing Co., Columbus, O.
Kilburn, Lincoln & Co, Fall River, Mass.
Link Belt Machinery Co, Chicago, Ill.
Rusden Machine Co., Warren, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Saginaw Manufacturing Co., Saginaw, Mich.
Smith, Jas. Woolen Machinery Co., Phila.
Smith, T. H., Cotton Mill, Jamestown, N.Y.

Preparatory Machinery, (Cotton).
Atherton, A. T., Mach. Co., Pawtucket, R. I.
Howard & Bullough Am. Machine Co., Pawtucket, R. I.
Kitson Machine Co., Lowell, Mass.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.

Press Boards and Fenders.
Rogers, H. E, South Manchester, Conn.

Presses.
Boomer & Boschert Press Co., 338 West Water St., Syracuse, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Crawford J. J, & Son, Nashua, N. H. (Power Screw, Hydraulic, Hollow Steam Plate.)
Curtis & Marble Machine Co, Worcester, Ma
Eccles, James, 2424 Amber St., Philadelphia, Pa.
Hart, Charles, Frankford, Philadelphia.
Howard, Geo C., Lansdowne, Pa and 2123 Market St. Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I.

Printers (Fabrics and Yarn.)
American Yarn Printing Works, Philadelphia.

Pulley Covers.
Warren Co., The Inc.), 34 Jackson St., Chicago, Ill.

Pulleys.
See Power Transmitting Machinery.

Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Rusden Machine Co., Warren, R. I.

Purifying & Filtration Plants.
Scaife, W. B. & Sons, Pittsburg, Pa.

Rag Pickers.
Smith, Jas. Woolen Mach. Co., Phila, Pa.

Raw Hide Gears.
New Process Raw Hide Co. Syracuse, N. Y

Reed and Harness Manufacturers.
American Supply Co, Providence, R. I.
Leisenring, John Mfg. Co., Phila.
Loom Picker Co., Biddeford, Me.
Walder, J. Paterson, N. J.

Reeds and Harnesses.
Jeffery Loom Harness Co, The Henry Woonsocket, R. I.
Leisenring, John, Mfg. Co., Philadelphia, Pa.

Remnants.
Feingold, H. & D., 91 Bedford St., Boston.

Ribbons.
Barton, F. C., 54 Franklin St., New York.
Cheney Bros, S. Manchester, Ct.

Ring Travellers.
National Ring Traveller Co., Providence, R. I.

Shaw, Victor, Ring Traveller Co., Providence, R. I.

Rope Transmission.
American Mfg. Co., New York.
Carpenter, Geo. B & Co., Chicago, Ill.
Dodge Mfg. Co., Mishawaka, Ind.
Link Belt Mfg. Co., Chicago, Ill.

Roving Cans.
Diamond State Fibre Co., Elsmere, Del.
Hill, James Mfg. Co., Providence, R. I.
N. E. Ventilating & Heating Co, 980 Manton Ave, Providence, R. I.
Laminar Fibre Co., No. Cambridge, Mass.
Walrus Fibre Mfg. Co., Medford, Mass.

Rubber Covered Rollers and Goods.
Boston Belting Co., Boston.

Saddles and Stirrups.
Dixon Lubricating Saddle Co., Bristol, R. I

Sample Card Mounting Machines.
Cummings-Angelum Machine Co., 320 Broadway, New York.

Sample Cards and Mounting.
Cummings-Angelum Machine Co., 320 Broadway, N. Y.
Merchants Sample Card Co., 33 Sullivan St., New York.

Scales
Sweet& Doyle, Cohoes, N. Y.

Schools.
American Correspondence School, Boston, Mass
American Correspondence School of Textile, New Bedford, Mass.
New Bedford Textile School, New Bedford, Mass.
Lowell Textile School, Lowell, Mass.
Philadelphia Textile School, Phila, Pa.

Screens (Perforated.)
See under Perforated Metal.

Selling Agents.
See Commission Merchants.

Separators.
Draper Co , The, Hopedale, Mass.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.

Sewing Machines and Supplies.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch), Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Fales, L. F., Walpole, Mass.
Industrial Mfg. Co., Camden, N. J.
Manufacturers' Supplies Co., 66 No. 4th St., Philadelphia.
Rusden Machine Co., Warren, R. I.
Union Button Sewing Mch. Co., 164 High St., Boston.
Willcox & Gibbs S. M. Co., New York.

Shafting Hangers, Etc.
See Power Transmission Machinery.

Shearing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Shell Rolls.
Cohoes Foundry & Mach. Co. Cohoes, N. Y
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Shoddies.
See Wool Shoddies.

Shooks.
Rice, T. B., Mifflin St. Wharf, Phila.

Shuttles.
See Bobbins, Spools, Shuttles, Etc.

Shuttle Checks.
Victor Shuttle Check Co., Auburn, N. Y.

Silk Machinery.
Butterworth, H. W. Sons Co, Philadelphia.
Granger Foundry & Machine Co., Providence. R. I.
Mason Machine Works, Taunton, Mass.
Rusden Machine Co., Warren, R. I.

Silo.
Schlichter, E. F. 321 Vine St., Philadelphia, Pa.

Singe Plates.
Butterworth, H. W. Sons Co., Philadelphia.
Taunton-New Bedford Copper Co., New Bedford, Mass.

Singeing Machines.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch). Somerville. Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Ms.
Granger Foundry & Machine Co., Providence, R. I.
Rusden Machine Co., Warren, R. I.

Sizing, Starch and Gums.
Arabol Mfg. Co., 155 William St., New York.
O. K. Soap Co., 968 Franklin St., Phila.
Stein, Hirsch & Co, 165 Duane St, New York.

Slashers.
Cohoes Foundry & Machine Co, Cohoes, N.Y
Lowell Machine Shop, Lowell, Mass.
Phillips The Thomas, Co., Providence, R.I.

Smoke Prevention.
Steam Boiler Equipment Co., 29 West Houston St , New York.

Soaps.
India Alkali Works, Boston, Mass.
O. K. Soap Co., 968 Franklin St., Phila.

Spindles.
Bamford & Smith, Pascoag, R. I.
Buckley, Benj'a, Sons, Gun Mill, Paterson, N. J.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Ward & Undergrift, Elmer, N. J.
Whitin Machine Wks, Whitinsville, Mass.

Spindle Tubes.
Bamford & Smith, Pascoag, R. I.

Spinning Cylinders.
N. E. Ventilating & Heating Co, 980 Manton Ave, Providence, R. I.

Spinning Frames.
See Cotton Machinery.

Spinning Rings.
Draper Company, Hopedale, Mass
Whitinsville Spinning Ring Co, Whitinsville, Mass.

Spinning Tubes.
Buckley, Benj'a. Son, Gun Mill, Paterson, N. J.

Spools. *See Bobbins, Spools Shuttles, Etc.*

Spool Cotton for Mfrs. Use.
Warren, W. Thread Works, Westfield, Mass.

Spooler Knotter.
Barber & Colman, 11 Pemberton Sq., Boston.

Sprinklers
International Sprinkler Co., Philadelphia, Pa.

Stamps for Hosiery.
Atlas Copper Stamp Works, 15 Whitehall St., N. Y.
Wells, Wilfred, 505 W. Lehigh Ave., Philadelphia

Steam Boilers.
Babcock & Wilcox Co., The, 29 Cortland St., New York City.
Brown, C. H, & Co, Fitchburg, Mass.

Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co, Hartford, Conn.

Steam Engines.
American Blower Co., Detroit, Mich.
Brown, C. H, & Co, Fitchburg, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Hooven (The), Owens & Rentschler Co, Hamilton, O.
Rusden Machine Co., Warren, R. I.
Sturtevant, B. F. & Co., Boston.

Steam Meter.
St. John, G. C., 143 Liberty St., New York.

Steam Surface Coverings.
Keasbey, Robert A., New York.

Steam Specialties.
Butterworth, H. W. Sons Co., Philadelphia
Jenkins Bros., New York.
Rusden Machine Co., Warren, R. I.
Steam Boiler Equipment Co., 29 West Houston St., New York.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.
St. John, G. C., 143 Liberty St., New York.
Sturtevant Co., B F., Boston.
U. S. Rocking Grate Bar Co., Elizabeth, N.J

Steam Valves.
Jenkins Bros., New York.

Stop Motion for Looms.
See, also, Warp Stop Motions.
Tucker Stop Motion Co., Winsted, Ct.

Tanks, Tubs and Vats.
Cypress Lumber Co, Apalachicola, Fla.
Hoag, A. W. & Co., Reading, Pa.
Lewis, H. F. & Co., New O leans, La.
Rusden Machine Co. Warren, R. I.
Schlichter, E. F., 321 Vine St., Philadelphia. Pa.
Stearns, A. T, Lumber Co, Neponset, Mass.
Woolford, George, 2240 No. 9th St, Phila, Pa.

Tapes, Braids and Edgings.
Barton, F. C., 54 Franklin St., New York.
Cathcart, John, & Co, 115 Franklin St, N. Y
Chapin, Geo W Philadelphia Pa.
Friedberger Mfg. Co, Germantown, Pa.
Hamilton, J. H. & Co., 84 Franklin St., N. Y.
Krout & Fite Mfg. Co., Allegheny Ave. and Emerald st., Philadelphia.
Rhelnstrom, R. A., 176 West York St., Philadelphia, Pa.
Weimar Bros, 1817 East York St, Phila, Pa.
Young, Wm. M., 2421 Mascher St., Philadelphia, Pa.

Temples.
Draper Co., Hopedale, Mass.

Tension Pulleys.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Tentering Machines.
See Dyeing, Bleaching Machinery, Etc.

Tenter Clips.
See Dyeing, Drying, Bleaching and Finishing Machinery.

Testing Machines.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa.

Textile Schools.
See Schools.

Thread Board for Spinning & Twisting Frames.
Houghton, L. T. Worcester, Mass.

Thread Protectors.
Ring Frame Thread Protector Co., The, Amsterdam, N. Y.

Tickets and Labels.
Saranac Electrical Mfg. Co., St. Joseph, Mich.

Tower Clocks.
Howard E. Clock Co., 403 Washington St., Boston; 41 Maiden Lane, New York.

Turbine Governors.
Replogle Governor Works, Akron, O.

Turbines.
(See Water Wheels.)

Valves—Rubber.
Boston Belting Co., Boston, Mass.

Ventilating Apparatus.
Allington & Curtis Mfg. Co., Saginaw, Mich., 81 Wareham St., Boston.
American Air Moistening Co., Boston.
American Blower Co., Detroit, Mich.
Berry, A. Hun, 23 W. 1st St, Boston, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Massachusetts Fan Co., Exchange Bldg., Boston.
New England Ventilating & Heating Co, Providence. R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philapelphia.
Philadelphia Textile Machinery Co, Hancock St, above Lehigh Ave, Phila, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
The Sterling Blower & Pipe Mfg. Co., 44 Huyshope St, Hartford, Conn.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.

Warp Coiler.
Eccles, James, 2424 Amber St., Philadelphia, Pa.

Warp Stop Motions.
Draper Co., Hopedale, Mass.

Washers (Cloth).
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass
Butterworth, H. W. & Sons Co., Philadelphia.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass
Kenyon, D. R., & Son, Raritan, N. J.
Phillips Co, The Thomas, Providence, R. I.
Rusden Machine Co , Warren, R. I.

Watchman's Clocks.
Eco Magneto Clock Co, 620 Atlantic Ave, Boston.
Howard, E Clock Co., 403 Washington St., Boston, Mass., 41 Maiden Lane, New York.
Nanz & Co. 127 Duane St., New York.

Water Purifiers & Filters.
Scaife, W. B. & Sons, Pittsburg, Pa.

Water Wheels.
Hunt, Rodney, Machine Co, Orange, Mass.
Leffel, James, & Co, Springfield, O.

Water Wheel Governors.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Leffel, James & Co, Springfield, Ohio.
Replogle Governor Works, Akron, O.

Winders. (Back.)
Taylor, Jas., 835 Arch St., Philadelphia.

Winder Bobbins.
Sweet & Doyle, Cohoes, N. Y.

Winders. (Hosiery.)
Altemus, W. W. & Son, Philadelphia.
Foster Machine Co., Westfield, Mass.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia.
Universal Winding Co, 95 South Street, Boston.

Wood Pulleys.
Chase Pulley Co., Providence, R. I.
Dodge Mfg Co., Mishawaka, Ind.
Hoag, A. W. & Co , Reading, Pa.
Saginaw Manufacturing Co. Saginaw, Mich.

Wool Cleaning Compound.
India Alkali Works, Boston.

Wool Combing Machinery.
Leigh, Evan A. 35 Mason Bldg., Boston.

Wool and Waste Dusters.
Atlas Foundry and Mch. Co., Newark, N. J.
Gerry, Geo, & Son, Athol, Mass.
Sargents', C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Woolen and Worsted Machinery.
Altemus, W. W, & Co, 2316 N. 4th St, Phila, Pa.
American Tool and Machine Co., Boston.
Arguto Oilless Bearing Co, Wayne Junction, Phila
Arlington Mch Works (Arthur Birch), Arlington Heights, Mass.
Atlas Foundry and Mch Wks., Newark, N.J.
Birch Brothers (Albert Birch), Somerville, Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass
Fales, L. F , Walpole, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A. & Son Machine Co, Phila, Pa.
Howard, G o. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Kenyon D. R. & Son, Raritan, N. J.
Leigh, Evan A. 35 Mason Bldg, Boston.
Lever, Oswald, Lehigh Ave. and Masehor St., Philadelphia. Pa.
Lowe, Stephen C., 186 Devonshire St., Boston. Agt. John Hetherington & Sons, Ltd.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave , Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Philadelphia.
Phillips Co. The Thomas, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Schofield, Geo. F., Philadelphia.
Smith, Jas. Woolen Machinery Co., Phila.

Wool Shoddies.
Becker, C. W., Agt., Amsterdam, N. Y.
Riverdale Woolen Co , Northbridge, Mass.
Slack, Wm. H. H., & Bro, Springfield, Vt.

Wool Washing, Preparing and Drying Machinery.
Hunter, Jas. Machine Co., No. Adams, Mass.
Phillips Co, The Thomas, Providence, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Sargent's, C. G, Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

YARNS, THREADS, ETC.

Banding.

Moore, C. & Co, 12 S. 5th St, Phila, Pa.
Warren, W, Thread Works, Westfield, Mass.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Mills, Chattahoochee, Ga , Treasurer's Office, Springfield, Mass.

Cotton Yarns.

American Cotton Yarn Exchange, 67 Chauncy St., Boston.
Barnesville, Mfg. Co., Barnesville Ga.
Buckingham & Paulson, 83 Leonard St. New York.
Catlin & Co, New York and Boston.
Charles, W. B., Amsterdam, N. Y.
Dana Warp Mills, Westbrook. Me.
Dexter Yarn Co., Pawtucket, R. I.
Dodds, J. S., 517 Wool Exchange, New York.
Eddy & Street, Providence, R. I.
Spring St., N. Y.
Eichmann & Sternberg, New York.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Indian Orchard Co., Indian Orchard, Mass.
Jenckes, E., Mfg. Co., Pawtucket, R. I.
Mitchell, Jas. E, & Co, Boston and Phila, Pa.
Montgomery, J. R, Co, Windsor Locks, Ct.
Monument Mills, Housatonic, Mass.
Morgan, E. A., 54 Franklin St., N. Y.
New England Cotton Yarn Co , New Bedford, Mass.
Orswell Mills, Fitchburg, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Mills, Chattaeoochee, Ga., Treas- Office, Springfield, Mass.

Cotton Yarns Wool Spun.

Broadbent, J. & Sons, Unionville, Conn.

Flax. Hemp. Jute and Ramie.

Fawcett, Hughes, 115 Franklin St., N. Y
Eichmann & Sternberg, 530 Broadway, N. Y.
Morgan, E. A., 54 Franklin St., N. Y.

Gassed Yarns.

Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, New York.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
New England Cotton Yarn Co , New Bedford, Mass.

Glazed Yarns.

Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Lorimers, Wm. H. & Sons Co., Philadelphia.
Malcolm Mills Co, Frankford, Pa.
Montgomery & Co, J. R, Windsor Locks, Ct.
Morgan, E. A., 54 Franklin St., N. Y.
Warren, W, Thread Works, Westfield, Mass
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Harness Twine.

Cranston Worsted Mills, Bristol, R. I.
Eichmann & Sternberg, 530 Broadway, N. Y.
Fawcett, Hughes, 115 Franklin St., N. Y.
Moore, C., & Co., (S. W. cor. 5th and Market Sts.)
Morgan, E. A., 54 Franklin St., N. Y.
Warren, W, Thread Works, Westfield, Mass.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield. Mass.

Hosiery and Knitting Yarns.

Barnesville Mfg Co., Barnesville, Ga.
Boyer, B. F, & Co, Camden, N. J.
Broadbent, J. & Sons, Unionville, Conn.
Cranston Worsted Mills, Bristol, R. I.
Dexter Yarn Co., Pawtucket, R. I.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Herbst, Albert & Co., E. Allegheny Ave. Philadelphia.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E., Manufacturing Co, Pawtucket, R. I.
Mitchell, James E, & Co, Phila. and Boston
Monument Mills, Housatonic Mass.
New England Cotton Yarn Co., New Bedford, Mass.
Orswell Mills, Fitchburg, Mass.
Rockwell, E. M, Leominster, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y
Skerry, A T, & Co, 47 Leonard St, N. Y.
Walcott & Campbell Spinning Co, New York Mills, Oneida Co. N. Y.
Warren, W, Thread Works, Westfield, Mass.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Mercerized Yarns.

Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Lorimer, Wm. H. & Sons Co., Philadelphia.
Montgomery, J. R. & Co., Windsor Locks. Conn.
Morgan, E. A., 54 Franklin St., N. Y.
Pennypack Yarn Finishing Co., Holmesburg, Pa.

Mohair Yarns.

Cranston Worsted Mills, Bristol, R. I.
Goff, D. & Sons, Pawtucket, R. I.
Queensbury Mills, Worcester, Mass.
Skerry, A. T, & Co., 47 Leonard St., N. Y.

Novelty Yarns, Tinsels, Silk Noils, Etc.

Cranston Worsted Mills, Bristol, R. I
Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Malcolm Mills Co, 229 Chestnut St, Phila, Pa.
Montgomery & Co, J. R, Windsor Locks, Ct.
Skerry, A. T, & Co, 47 Leonard, St, N. Y.

Silk Yarns.

Cheney Bros, S. Manchester and Hartford Ct.
Eddy & Street, Providence, R. I.
Eichmann & Sternberg, 530 Broadway, N Y.
Ryle, Wm, & Co, 54 Howard St, N. Y.

Woolen and Merino Yarns.

Boyer, B. F, & Co, Camden, N. J.
Broadbent, J. & Sons, Unionville, Conn.
Eaton Rapids Woolen Mills, Eaton Rapids, Mich.
Eddy & Street, Providence, R. I.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E. Mfg. Co.. Pawtucket. R. I.
Rockwell, E. M, Leominster, Mass.
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Skerry, A. T, & Co, 47 Leonard St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Speed, James, 170 Summer St , Boston.

Worsted Yarns.

Alleghany Worsted Mills, Phila, Pa.
Boyer, B. F, & Co, Camden, N. J.
Campion, Richard, 17 Bank St., Phila.
Cranston Worsted Mills, Bristol, R. I.
Croft, Howland, & Sons, cor. Broadway and Jefferson Ave., Camden, N. J.
Goff, D. & Sons, Pawtucket, R. I.
Herbst, Albert, & Co., E. Allegheny Ave., Philadelphia.
Pocasset Worsted Co., Thornton, R. I.
Queensbury Mills, Worcester, Mass.
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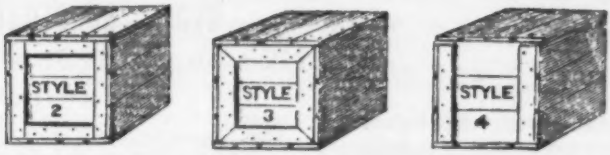

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1337 **Assistant Supt.**, experienced in the manufacture of bookbinders' cloth, window shades, etc., is open to a position. English; 45 years of age; married. Will go to any part of the United States. Best of references.

WOOLEN CARDERS.

1953 **Boss Woolen Carder,** experienced on all classes of wool, all cotton, wool and cotton, and shoddy mixes, desires a position. Is an American; married; 40 years old. Leaving present position on account of shutdown. Is steady, reliable, and can give good references from last employers. Three workers in family.

1270 **Boss Carder** (and spinner, if desired) in an underwear or hosiery mill. Fine and heavy wool and cotton. German; age 34. First class man in every respect. Excellent references.

1617 **Boss Carder or Second Hand.** Has held several first-class jobs also has had experience in spinning. Can accept position at once. All grades of stock, including shoddies, and cotton and wool and all wool.

1953 **Boss Carder.** Has worked on all kinds of stock, all wool, all cotton, cotton, wool and shoddy mixed. Married man; two workers in family. Strictly temperate.

1903 **Boss Carder,** woolen or worsted mill, desires a position. Experienced on fine and coarse work; 27 years of age; American; married. Can refer to responsible parties. Moderate wages desired. Will go to any part of United States.

1944 **Carder,** or carder and spinner. Age 48; unmarried; American. Has worked on all kinds of woolens, and of late on shoddy and cotton mixes. Is familiar with Davis & Furber machines. Excellent reference from past employer.

COTTON CARDERS.

1886 **Overseer of Cotton Carding;** 31 years of age; married; of English parentage; desires position in the Middle, Atlantic or New England States. Familiar with Lowell, Pettee, Biddeford, Woonsocket, Whitin, Mason and all makes of pickers of above machinery. Good references.

1893 **Boss Carder of Cotton.** 38 years old; married; an American; who can also handle a weave room of from 300 to 500 looms, wishes to make a change. Has had over 15 years' experience in New England mills. Best of references.

1919 **Overseer Cotton Carding and** Spinning, who has had an experience of over 10 years in N. E. and New York mills, is open to a position. 26 years old; American; single. Thoroughly competent and reliable. Best of references.

1931 **Overseer of Carding and Combing;** 33 years old; American; single. Has worked on all classes of fine combed work; both American and English machinery. Can take place immediately. 12 years in a large New England mill.

1932 **Overseer of Carding** or would take assistant superintendent position. Age 27; American; single. Carded and combed American, Egyptian and Sea Island Cotton, making yarns from 8s to 100s; both plain and colored goods. Can come at once.

1929 **Overseer** cotton carding and spinning is open to a position in any part of U. S. Age 31; German; single. 12 years' experience as overseer carding in important cotton spinning mills in France, Germany, Bohemia and Italy. Specialty of Egyptian and American combed fine yarns. Best of references.

WOOLEN WEAVERS.

1937 **Boss Weaver.** Can furnish excellent recommendations. Is a first class man on all kinds of fancy woolen goods, and is thoroughly posted on Crompton & Knowles looms. Wants a place at $2.75 or $3.00 per day. Will go anywhere. Age 39; American; married.

1940 **Boss Weaver or Designer,** or could fill a position as all around man in a small mill. Age 42; Scotch; married. Worked on fancy cashmeres, blankets, flannels, carriage robes, and other fancy goods. Is familiar with Crompton & Knowles, Davis & Furber, and other looms. Wants to go West or South.

1947 **Boss Weaver,** designer or superintendent. American; married; age 36. Fancy cassimeres and worsted cloakings; most all grades of goods for ladies' and gents' wear. Crompton & Knowles and Davis & Furber looms and Jacquard.

1959 **Boss Weaver,** who is familiar with cotton, woolen and worsted looms and all classes of goods, is open to a position in a large mill. 46 years of age; American; married. Strictly temperate and is recommended by some very large N. E. woolen and cotton mills.

1964 **Boss Weaver,** familiar with all makes of woolen and worsted machinery, and who has worked on ladies' dress goods and men's wear, desires a position. 39 years of age; American; married. Can give good references.

1949 **Boss Weaver,** capable of taking entire charge of a small woolen mill, will be open to a position in a few weeks. 44 years old; American; married. Familiar with all classes of woolen and worsted goods. Good references. Three workers in family.

COTTON WEAVERS.

1934 **Overseer of Weaving.** Age 31; English; married. Worked on sheetings, sateens, twills, fancies of all kinds and fancy lenos and lappetts. 14 years experience as loom fixer and 18 months as second hand.

1235 **Overseer of Cotton Weaving,** with long experience in large Eastern cotton mills, is open to a position. Has handled prints, twills, sateens, lenos, cheviots, dress goods, and also Jacquard cloths. Thoroughly understands Lowell, Crompton & Knowles, Whitin and English looms. 37 years of age; American; single. Best of references from former employers.

1879 **Overseer of Weaving** or Assistant Supt. 17 years' experience in New England cotton mills, having charge of 1300 looms for 6 years recently. Fine and coarse goods on all well known machinery. Best of references.

1826 **Wanted by Steady, Industrious** man, a situation as overseer, in Tape mill. Has had considerable experience, but does not know everything, but willing to improve. $2.25 per day. Has been overseer a short time, and has perfect control of help. Age 46; English; married. No family. Would go anywhere, and settle.

1235 **Overseer of Weaving.** Age 42. Capable of good management. Has high experience on fancies, lenos, sateens and twills, both as fixer and assistant overseer. Can give good reference.

WOOLEN SPINNERS.

1927 **Overseer Spinning,** carding or flyers. 37 years old; married, and can furnish best of references. Twenty-three years' experience. A German.

1784 **Worsted Drawer and Spinner.** Would take twisting. Age 25; Englishman. Can furnish references as to ability and character.

1912 **Boss Worsted Spinner** on cop- and flyer frames, who is also familiar with spooling, reeling, skein winding and dressing, is open to a position. Thirty-three years old; American and single. Has had 19 years' experience in one of the largest worsted mills in N. E., making yarns from 1 ½s to 56s from domestic and foreign wools. Has also handled mohair and camel hair. Good references.

1917 **Overseer Woolen Spinning.** Is thoroughly competent to take charge of a large spinning room. 38 years old; French; married. Has spun yarns for flannels, tweeds and knit goods, also cotton and wool mixes, shoddies, ranging in all from ½ to 14 runs. Is familiar with Davis & Furber, Johnson & Bassett, Platt and other makes. Very satisfactory references.

1956 **Overseer Woolen Spinning,** 34 years old, American, married, desires position. Understands Johnson & Bassett, Davis & Furber, Cleveland Bros. and Woonsocket mules; and has made all wool, merino and shoddy mixes. Can give good references.

1941 **Boss Spinner.** Wants $3.50 or more. One daughter a spooler and twister. Excellent references. Is familiar with Davis & Furber, Johnson & Bassett, and other makes of machinery.

COTTON SPINNERS.

1963 **Overseer** or second-hand of ring spinning, spooling, twisting and warping, desires a similar position in a New England cotton mill. Has been overseer in a Canadian mill for past seven years. Can give satisfactory references. 30 years of age; French-Canadian; married.

1960 **Overseer of Cone Winding** and spooling or ring spinning, who understands Universal, Foster, Broadbent and Payne winders, and Whitin and Mason frames, desires a position. Has worked on carded and combed yarns from 4s to 160s; also, mercerized, gassed and bleached yarns from 2 to 8 ply. Young man; American; married, and can give satisfactory references from large mills.

1950 **Overseer** or second-hand of cotton mule spinning desires a position in the Southern States at reasonable wages. Is a good fixer and has made yarns ranging from 4s to 40s. 39 years old; German; married. Best of references. One worker in family—drawer in.

1915 **Overseer of Ring Spinning,** or carding, would like a position in a cotton mill. Is familiar with fine and coarse yarns and almost all American machinery. An American; 33 years of age; married. Best of references.

1950 **Second Hand on Mules.** Has had 20 years' experience on cotton mule spinning as mule fixer and second hand. Age 39, with family. Good references.

FINISHERS.

1900 **Boss Finisher** of men's wear, ladies' dress goods, worsteds, cassimeres, kerseys, cotton and woolen mixes, who has gained his experience as finisher in some of the large English and American mills, is open to a position. Is familiar with all standard makes of finishing machinery; 48 years of age; Scotch; married. Can refer to well-known men.

1911 **A Boss Finisher** of over 20 years' experience on cassimeres, flannels, dress goods cloakings and worsteds, is open to a position. Understands Parks & Woolson, Curtis & Marble, Hunter, Miller Press Co., Rodney Hunt and other machines. Married; 44 years old, and can give good references. Over 15 years in last place.

1921 **Boss Finisher** of a satinet mill or second-hand of a woolen mill, would like a position. Has held these positions in good sized mills, and is familiar with satinets and woolens. 23 years of age; American; single. Good references as to steadiness, reliability and quality of work.

1958 **Boss Finisher** of underwear, cotton or wool mixed goods, who understands Wheeler & Wilson buttonhole machines, Union Button, Union Special, etc., is open to a position in the New England or Middle States. 30 years; American; married. Been employed for a number of years by concern for whom he is now working. Exceptionally good references.

1808 **Boss Finisher.** Has worked on worsteds, cassimeres, blankets, overcoatings, cloakings, flannels, dress goods, satinets unions and beavers, and is familiar with most all makes of machinery. Age 39; American; married. Has had a large experience, and can furnish most excellent references from past employers.

DESIGNERS.

1923 **Assistant Designer** on woolen or worsted dress goods and suitings is open to a position. Age 21; American; single. A graduate of one of the largest textile schools in the country, and has had experience in a good New England mill. Also understands flannels and satinets. Good references.

1897 **A Young Man,** 28 years of age, competent to handle the designing for a cotton or silk mill, would like a position. Has made in cotton, plain, fancy and leno; in silk, tie silks, dress goods and linings. Looms all well-known makes. Is Scotch, and single. 14 years' experience in weave room and designing room. Good references from N. J. and Conn. mills. Four workers in family—weavers.

1962 **Designer,** boss weaver, or both, desires a position in a woolen or worsted mill. Is at present employed as designer and boss weaver on worsted and woolen dress goods and suitings, and giving satisfaction. 30 years old; Swede; married. Expects moderate salary. Will go to any part of the United States. References from well known textile men.

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Twenty years' experience on all kinds of woolen and worsted men's wear and ladies' dress goods, is open to a position. 40 years old. Good references. Price moderate. C. W. S., care of TEXTILE WORLD.

KNITTERS.

1943 **Fixer or Foreman.** Age 27; American; married. Has had five years' experience on knitting machines, including Standard B and C machines, can handle new Victor machines, also sewing machines. Wants to change on account of location.

1945 **Asst. Supt.,** or overseer of a large stitching department in knit underwear mill. Willcox & Gibbs sewing machines, Union Special and loopers.

1946 **Supt.** of knitting mill, or would take position as boss knitter. Age 29; Canadian; married. Fleece-lined balbriggan men's and children's ribbed fancy tops and nearly all kinds of knit underwear. Is familiar with all makes of American knitting and finishing machinery, with the exception of Cooper's circular rib. Will not go West or South.

1744 **Fixer** wants position in Pennsylvania. American; married. Is familiar with Boss, Invincible, McMichael & Wildman, Brinton, Denny and Victor machines. Wants $15 per week.

1961 **Supt. or Manager** of large hosiery yarn mill will be open to a position shortly American; married. Has manufactured in the South hosiery yarns in natural state, mixtures, silver grays, bleached and colored. Can refer to influential men.

1951 **Overseer** of cuff knitting, who thoroughly understands fixing Tiffany and Cooper machines, wishes position. 45 years of age; English; married. Good references.

1939 **Boss Knitter.** Age 42; English descent; married. Has one girl who is a winder. 11 years as foreman knitter in one mill, and for the past seven years in full charge of knitting and winding in a mill, but wants to change on account of locality. Campbell & Clute, Tompkins and Crane machines. Balbriggan underwear, fleece-lined and two-thread work, also fancies. Worked mostly on woolen goods.

1831 **Boss Knitter** on circular latch needle machines, making ribbed underwear, or spring needle work made on Tompkins machine. Also a practical wool carder of about eight years' experience as overseer in underwear and shoddy mills. Understands raw stock and how to handle it so as to give best results. An American, steady and reliable. Age 36.

1920 **Supt. of Glove Factory** or knitting mill who understands the making of fabric gloves of silk, cotton, cashmere, and also knit gloves and mittens. 44 years of age; German; married, and has four workers in family, who understand glove sewing, pointing, etc. Has held responsible positions, and is a good manager. Can refer to some large establishmhnts in New York and Chicago.

1905 Would like position in a Pennsylvania mill taking charge of Union Special, Merrow, Wheeler & Wilson, Singer, Wilcox & Gibbs, Kruse & Murphy, or any other kind that is used in finishing underwear. Best of references.

1824 **Boss Knitter or Fixer** on ribbed underwear. Has worked on fancies, double knees and tops and plain work. Is familiar with Brinton & Denny, McMichael & Wildman, Huse and Pepper machinery Will work for $2.50 or more, according to position.

MISCELLANEOUS.

1935 **First-class Twister** and Entering. 25 years' practical experience wishes steady position in country place.

1489 **Boss Finisher,** Second-hand or Boss Shearer. Well experienced; excellent references. English; age 27; single.

1835 **Beamer, Twister,** also understands drawing-in and splitting. Age 27; American. Has worked on ginghams, dress goods, shirtings and cotton worsted.

1965 **A Second-class Engineer,** 48 years of age, American, would like a position as such in a N. E. mill. Is steady and reliable. Good references from former employers.

1873 **Wanted** situation as Master Mechanic in cotton corporation. Has had large experience. Middle aged; strictly temperate. A graduate of a technical school. Learned carpenter's trade and machinist's

1895 **Shipping Clerk** and Bookkeeper, familiar with mill office work, would like to take a position as such in any part of United States. 21 years of age; single; an American. Best of references.

1865 **Machinist and Fixer.** Has had eight years' experience. 24 years old; English; single Is thoroughly familiar with Singer, Wheeler & Wilson, Merrow Union Special, Lamb, Pepper, and Heyworth and Beattie loopers.

1873 **Master Mechanic** in cotton corporation. Has had large experiences. Middle aged; strictly temperate. A graduate of a technical school. Learned carpenter's trade and machinist's.

1866 **Overseer of Burling** and Sowing or Cloth Examiner in commission house. Have had 25 years' experience in the cloth room and can handle any class of woolens or worsteds, either dress goods or men's wear. 41 years old; Irish; married. Best of references. Have a son 19 years old who is a percher and brusher.

1914 **A Young Man** who thoroughly understands the keeping of mill books would like a position in the Southern States or would go to Cuba or Puerto Rico Is a first-class man and perfectly familiar with general office work. An American; 22 years of age; single. Steady and reliable, and can give good references.

1910 **Loom Fixer** on Knowles, Crompton, Stafford, Whitin, Mason, Colvin and other looms, would like a position. Has made golf cloths, plaid backs, fancy dress goods, vicunas, kerseys, etc., also cotton lenos, lappets, novelties and plain goods. American; 38 years of age and single, steady and reliable, and can give satisfactory references.

1659 **Bleaching Overseer.** Seven years' experience as overseer, and has first-class references. Has handled all classes of work in the cotton piece goods line, from heavy shoeduck, drills, etc. down to cheesecloth, and bag goods, also all kinds of colored work, such as colored bordered handkerchiefs, colored striped shirtings, colored spots, also white and colored towels, linen crash, all kinds of cotton flannels, etc.

DYERS.

1505 **Boss Dyer.** 11 years experience coloring according to the requirements of the trade, on all kinds of wool, worsted yarns, worsted piece dyes, cotton warp worsted piece dyes, cotton and shoddy piece dyes, shoddy, raw cotton and cotton yarns. Willing to work for reasonable wages.

1954 **Dyer and Bleacher.** Fast colors on cotton, also common colors, one dip warp and skein. Aged 36; married. Excellent references.

1948 **Assistant in Dyehouse.** Age 20; single; American. Has a thorough knowledge of the application of aniline colors on cotton, wool and piece goods.

1952 **Supt.** of cotton printing, dyeing and finishing. Age 39; American; married. Has worked on calicoes, shirtings, cretonnes, sateens, etc.

1952 **Chemist** and color man of proved ability in cotton printing, dyeing and finishing, is open to offers in this line. An American; married; about 38 years of age.

1954 **Dyer and Bleacher** of fast, common and one dip colors on cotton warps and skein yarns, is open to a position. Scotch Irish; married; 38 years of age. Excellent references.

1839 **Boss Dyer,** English, age 35, married. Has been boss dyer for 14 years in this country and England on all classes of woolen and cotton warp goods, such as satinets, cloakings, and shoddy, and is well up in dyeing light shades out of dark stock. Understands worsted piece dyeing, raw stock and worsted yarn. Steady and reliable, and best of references. Would work for fair pay.

1913 **Boss Dyer** or secondhand, who has had over 23 years' experience in large woolen mills in N. E., is open for a position. 44 years of age; married. Is familiar with cotton, woolen and worsted yarn dyeing for cassimeres, dress goods and trowserings; also piece dyes and raw stock. Best of references.

1908 **Boss Dyer and Bleacher.** Age 23; American; single. Now employed, but will change for good job. Best of references from present employers.

1894 **A Competent** cotton dyer, experienced on long chain, short chain, skein yarn, and raw stock, is open to a position. Age 48; Scotch; married. Will accept reasonable wages. Has good references.

1883 **A Boss Dyer** who understands cotton and wool raw stock dyeing, piece dyes, knit goods, and has had large experience on cotton skein yarns for the webbing trade, is open for a position. 38 years old; married, and an American. Will accept a reasonable salary.

1928 **Overseer of Dyeing,** 28 years of age, American, single, would like a position in a New England mill or in the Middle Atlantic States. Eight years' experience on wools, shoddies, raw cotton and cotton yarns, piece dyed kerseys, beavers and carriage cloths. Good references from large Eastern mills. Salary moderate.

1933 **Foreman Bleacher** and Dyer on cotton goods. Has a specialty of dyeing fast oxidized black on piece goods. Is also a color dyer. Age 34; English; married. Prefers Middle or Southern States.

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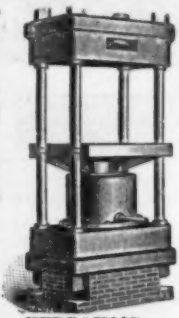

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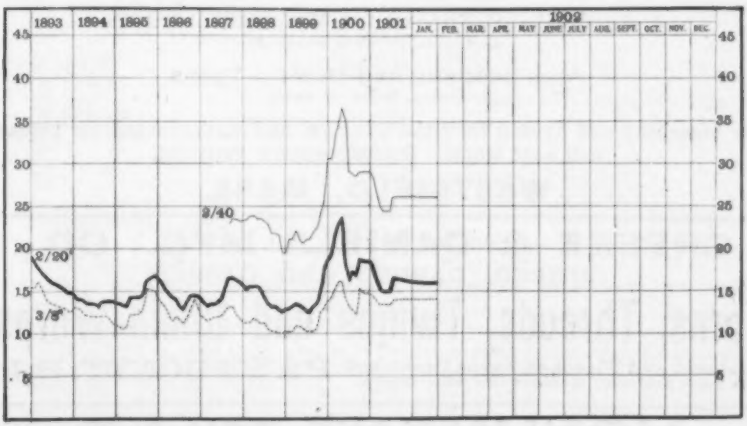
YARN DEPARTMENT.



Eastern Yarn Market.

The cotton yarn market took on a quieter tone at the end of the past month, and at this writing no revival has yet made its appearance. The prices in some cases receded, but the changes were slight. The weak spots were in coarse counts, while the quotations for fine yarns in a few cases were higher. It has become a waiting market. The mills in some cases have refused orders owing to the date of delivery required. The fall in the price of raw cotton has exerted a depressing influence upon the yarn market, and for this reason it is not likely that any decided advance will occur this season.

Owing to the weakening of price in the market for raw material, buyers of cloth and yarn have been averse to make contracts at present prices. Spinners, especially those on fine counts, are well sold up; many of them have contracts to fill that will keep them busy well into April, and manufacturers who from motives of prudence refrained from making long time contracts are now searching for orders and offer inducements in the way of lower prices.

We quote as follows:—

Eastern Cop Yarns, Carded.

6s	13½-14¼
8s	14-14¾
10s	14¼-15½
14s	15½-16¼
16s	16-16¼
22s	17½-18¼
24s	18-18¾
26s	18½-19¼
30s	20½-21¼
34s	21½-22¼
36s	22½-23¼
40s	23½-24¼

On cones, ¾c. more up to 14s; 1c. more than 15s to 22s; 1½c. from 22s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carder Peeler.

12s	16½-17¼
14s	16¾-17½
18s	17¾-18½
20s	17¼-19
22s	18½-19½
26s	20-20¾
28s	20½-21¼
30s	21-21¾
36s	21½-22¼
40s	25½-26¼
45s	27½-28¼
50s	31½-32¼
55s	34½-35¼
60s	39½-40¼

Eastern Two-Ply Warps, Carder Peeler.

2/30s	21¼-22¼
2/36s	23½-24¼
2/40s	25½-26¼
2/45s	28½-29¼
2/50s	32½-33¾
2/60s	40½-41¼

Egyptian Weaving Yarns.

Single Skeins Combed.

30s	30½-31¼
35s	32½-33¾
40s	34½-35¼
45s	36½-37¼
50s	38½-39¼
55s	40¼-41¾
60s	48-48¾
70s	58-58¾
80s	66-66¾
90s	70½-71¼

Two and Three Ply Skeins, Combed.

30s	32-32¼
36s	34-34½
40s	36-36½
45s	36½-37½

W. Warren Thread Works,

SPOOL COTTON
on 100 to 12,000 yd. Spools or Tubes.

A Specialty of Thread for Manufacturers Use
on Spools, Tubes or Bobbins.

Also Seaming and Hosiery Yarns
on Cones, Tubes or Skein.

Our bleaching and dyeing facilities are new and unsurpassed for prompt and neat work. Correspondence solicited.

WESTFIELD, MASS.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps,

Colored and Bleached Yarns Furnished in any manner desired by the trade. **PAWTUCKET, R.I.**

MONUMENT MILLS,

Manufacturers of
White, Colored, Fancy and Double Twist
HOUSATONIC, MASS.

Cotton Warps

4s to 60s.

Buckingham, Paulson & Co.,
COMMISSION MERCHANTS.
COTTON YARNS of all Descriptions.
83 Leonard St., New York.
120 Chestnut Street, Phila. 530 5th Ave., Chicago. Ills
Cash Advances, Cash Sales and Prompt Returns.
Consignments and correspondence solicited,

Eddy & Street,
COTTON, WOOLEN, **YARNS** AND **BRAIDS** WORSTED, SPUN SILK.
PROVIDENCE, R. I.

OIL SEEDS PRESSING CO.,

Manufacturers and Importers of

VEGETABLE OILS.

15 to 25 Whitehall Street, - - New York.

INDIAN ORCHARD COMPANY,

Indian Orchard, Mass.

Manufacturers of - - - -

COTTON WARPS AND YARNS
In gray and all colors, single or in any twist.

NOVELTY YARNS
In Cotton, Mercerized Cotton, Silk and Worsted, in various Patterns, Colors and Twists.

We are always pleased to assist our patrons of the Woolen Goods manufacture in special pattern warps for samples.

Carded and Colored Cotton for Mixing With Wool

Machined, or in Roving.

50s	41½-42½
55s	45-46
60s	47-48
65s	52-53
70s	55-56
75s	59-60
80s	68-70
90s	74-75

Egyptian Yarns on Cops.

Combed.

6s and 8s	21¼-21¾
10s and 12s	23¼-23¾
14s	24-24¾
15s and 16s	25¼-25¾
18s and 20s	25¾-26¼
22s	26¼-26½
24s	26¾-27¼
26s	28¼-28¾

Philadelphia Cotton Yarn Market.

The Government report in December, while it stimulated some little buying at very little advance, compelled spinners to pay 1c. more per pound for cotton.

The volume of yarn being used is large, and orders have been placed for large deliveries. Spinners have taken these more sparingly than usual, however, as they all claim there is absolutely no profit in any prices now prevailing.

Some spinners are willing to sell 16s to 20s at nearly the same price they would get for 10s to 14s, rather than take lower prices for coarser numbers.

The following prices are about today's market:—

Southern frame cones (good quality):—

10s	14
12s	14½
14s	14½-15
16s	14½-15
18s	14¾-15¼
20s	15½-16
22s	15½-16
24s	16½-17
26s	17-17½
30s	17½-18
40s	24½-25
50s	30-31

Southern high grade mule yarn:—

10s	14½-15
12s	15-15½
14s	15½-16
16s	16-16½
18s	16½-17

Southern high grade mule cones:—

20s and 22s	17-18
24s	18-18½

Southern frame yarn, lower grades:—

6s and 8s	13
10s	13½

Eastern cones (high grade quality):—

10s	15-15½
12s	15½-16
14s	16
16s	16½
18s	17
20s and 22s	17½-18½

Lower grades, very good Eastern yarn:—

6s and 8s	13-13½
10s	14-14½

Rise ¼c. per number to 16s.
Besides this, there is some comber

New England Cotton Yarn Co.

NEW BEDFORD, MASS.

JAMES E. STANTON, Jr., Agent.

Branch Offices:

ALBANY: 38 State Street. . . . . E. A. VAUGHN, Manager.
BOSTON: 77 Bedford Street . . . . . J. B. JAMIESON, Manager.
NEW YORK: 346 Broadway . . . . . P. H. CORR, Manager.
PHILADELPHIA: 213 Chestnut Street . . . . P. H. CORR, Manager.

Mule Spun Hosiery Yarns, Carded and Combed.
Colored Yarns, Solid, Mixes and Randoms.

Spinners of Cotton Yarn

Frame Yarns, Single and Twisted, Carded—Combed—Bleached
Fine Yarns, For Electrical Purposes

All Numbers 4 to 200.

From
American Peelers, Sea Island, Peruvian and Egyptian Cotton.

BENNETT, HOWLAND, ROTCH, N. B. SPINNING, COHANNET, NEMASKET, GLOBE, SANFORD, } **650,000 Spindles.**

Entire product sold direct to consumers through the Company's own offices.

CAPACITY, 50,000 Spindles.

ORSWELL MILLS

FITCHBURG MASS.

COMBED OR CARDED

COTTON YARNS

In Chains and Skeins, on Balls, Beams, Spools—single or twisted.

WILLIAM FIRTH, PRESIDENT. FRANK B. COMINS, TREASURER

AMERICAN MOISTENING COMPANY,

150 Devonshire St., Boston, Mass.

The "Drosophore" and "Vortex" Humidifiers.

Over 20,000 of our HUMIDIFIERS in operation.

Highest award on the Recommendation of The FRANKLIN INSTITUTE for

"SIMPLICITY and ORIGINALITY of DESIGN"

DANA WARP MILLS

Westbrook, Maine.

WHITE AND COLORED WARPS,

6s to 50s—Single and Ply.

MULE COPS,

from 30s to 50s from

AMERICAN AND EGYPTIAN COTTON.

The J. R. MONTGOMERY CO.,

WINDSOR LOCKS, CONN.

Manufacturers of

Mercerized Cotton Yarns. GIVES THE HIGH SILK-LIKE LUSTRE IN KNIT GOODS AND WOVEN FABRICS

Novelty Yarns. BOUCLE, BOURETTE AND SPIRALS, IN COTTON, WOOL WORSTED, MOHAIR AND SILK.

Cotton Warps. ON BEAMS, JACK SPOOLS AND TUBES. IN FANCY TWIST COLORS AND PRINTED.

waste used, that is made into 8s to 10s cones and sold at 13½ to 14c.

Skein yarn (mostly Southern):—

4s to 6s soft	13-13½
10s to 12s	13½
14s to 20s	14-14½
22s	14½-15
14/2	14¼-14½
16/2	14½
20/2	15-15½
30/2	17½-18
40/2	22-23
16/3 slack	15-15½
12/3 slack	14½
8/3 carpet	13-13¼

Skein yarn (mostly Southern):—

8/3 slack	13½-14
9/4 slack	13½-14

Warps (mostly Southern):—

14s to 16s	14-15
20s and 22s	14½-15
26s	15½
14/2	14½
16/2	15
20/2	15¼-15½
24/2	16-16¼
30/2	17½-18
40/2	22½-24
40/1	24-25

Mixed colored yarns (mock twist, half colors):—

6s to 10s	14½
12s to 14s	15-15½
16s to 18s	16-16½

Silver and jaeger, 1½ to 2c. over white.

Mock Egyptian, 3c. advance over white.

Egyptian, 4c. to 5c. above best quality white.

Combed yarn, 5c. to 6c. above carded.

Wool spun cotton yarn and merino in rather better demand. Some job mills are running to very good advantage, by making a great variety of yarn, mostly low grades.

Worsted Yarn.

Spinners continue busy on orders taken before first of the year. Spinners have all machinery space contracted for until next May or June. Weavers state that, because of slow deliveries on the part of spinners on low-priced contracts, they have been forced to buy thousands of pounds of yarn outside their regular contracts at prices in some instances 10 cents per pound above the price of yarn on contract. This action was necessary in order that orders for cloth could be filled promptly.

LINEN YARN IMPORTER.
Hughes Fawcett, 115 Franklin St., New York,
Flax, Hemp & Jute Line and Tow Yarns,
FOR WEAVING PURPOSES
Linen Jacquard Harness Twines.
Fine Cotton Harness and Heddle Twines.
For Cotton, Silk, Woolen and Carpet manufacturers. Correspondence solicited. Samples promptly furnished

CATLIN & CO.,
YARNS.
67 Chauncy St., Boston
316 Church St., New York.
306 Chestnut St., Philadelphia.

Walcott & Campbell Spinning Co.
FANCY HOSIERY YARNS
IN ALL COLORS.
New York Mills, Oneida Co., - N. Y.

JAMES E. MITCHELL & CO.,
COMMISSION MERCHANTS.
COTTON YARNS
For All Purposes.
122 & 124 Chestnut St., PHILADELPHIA. 74-76-78 Summer St., BOSTON.
SOLE AGENTS FOR
Lawton Spinning Co., - Providence, R. I.

TUCKER & COOK MFG. CO
MANUFACTURERS OF
WHITE AND COLORED COTTON **WARPS**
Nos. 6s to 30s,
On Beams, Jack Spools or in Chain
CONWAY, MASS.

GRANT YARN CO.,
COMBED AND CARDED COTTON.
YARNS 40s and above. AND
FITCHBURG, MASS. **WARPS**

COTTON, WORSTED, WOOLEN, MERINO AND FRENCH SPUN YARNS
Mercerized Cotton a Specialty
Write for Samples.
E. A. MORGAN & CO.,
54-56 Franklin St., N. Y. City.

EICHMANN & STERNBERG
530 Broadway cor. Spring St., NEW YORK.
Mercerized, Turkey Red, Gassed } Cotton Yarns.
Jacquard and Harness Twines.

C. MOORE & CO.,
MANUFACTURERS OF
TWINES, THREADS AND YARNS.
Jacquard Harness Twines of all kinds on hand and made to order.
S.W. COR. FIFTH & MARKET STS.,
Philadelphia.

HOWLAND CROFT, SONS & CO.

LINDEN WORSTED MILLS.

Fine Worsted Yarns

OFFICE AND MILLS:

Broadway and Jefferson Ave., Camden, N. J.

Represented by FIRTH BROADHEAD,
937 Banigan Building, Providence, R. I.

ALLEGHENY WORSTED MILLS,

Thomas Wolstenholme, Sons & Co., MANFRS. OF

ALL NUMBERS SINGLE AND TWO-PLY,

Worsted YARNS, Sell Direct,

on Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural & Fancy Mixes

Office and Mills: Frankford Ave. and Westmoreland St., Phila., Pa.

CRANSTON WORSTED MILLS.

Worsted and Mohair Yarns—white or colors, in skeins, on spools, cones, or shuttle bobbins.

NOVELTY YARNS—of Mohair and Worsted. We are the only manufacturers in the United States making these yarns from the raw material to finished product and making Yarns only.

CENAPPED YARNS of all kinds. Doup Yarns. Harness Yarns. For Braids, etc.

...Dyers of Yarn and Slubbing...

BRISTOL, R. I.

FRENCH SYSTEM. BRADFORD SYSTEM

B. F. BOYER CO.,

MANUFACTURERS OF

Worsted and Woolen Yarns

OFFICE AND MILL: Delaware and Cooper Streets. CAMDEN, N. J.

Albert Herbst & Co.,

EMERALD WORSTED MILLS,

East Allegheny Avenue,
Emerald and Wishart Sts.,

PHILADELPHIA, - PA.

MANUFACTURERS OF

Worsted Yarns

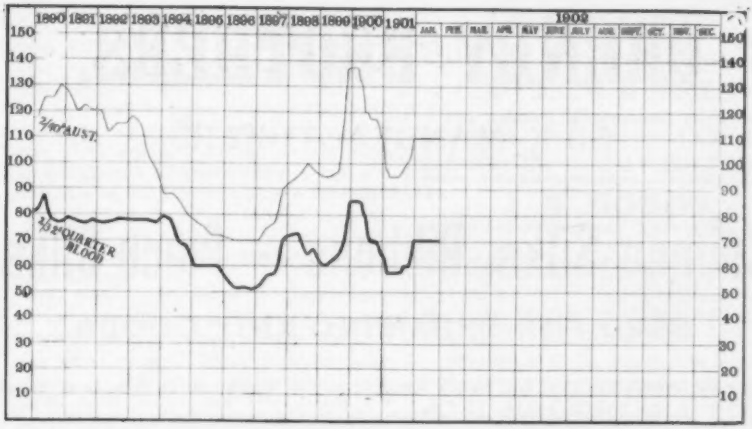
FOR KNITTING AND WEAVING.

MALCOLM MILLS CO.,

MANUFACTURERS OF

Novelty Yarns, Silk Noil Yarns, in Fast Colors AND White.

Mills, Frankford, Pa. Office, 229 CHESTNUT ST., PHILA.



Weavers are still working on light weight cloth. The fancy worsteds heavy weight samples have not been opened. The weavers have been waiting for the American Woolen Co. to open up before making prices.

Some of the weavers who bought yarn at comparatively high prices are not able to meet the market, but are confident that the overflow demand for Clay worsteds will carry them through and enable them to secure their full complement of business.

The heavy weight trade for fancies will open about February 15th. Consequently, there is a lull in the market, and there will be but little buying before that date. We should have said, "Spinning instructions given," instead of buying, because the spinners have all of them all their machinery space contracted for. Spinning instructions were not given and the weavers are waiting for orders so that they can give spinners just the amount and size of yarn to be delivered.

The spinners are doing well at the present time, and are all of them making money, because the present is a worsted season. Prices will be maintained and high prices will be asked by mills which are sold up. No orders will be taken be-

SILK NOILS AND SILK NOIL YARNS
IN WHITE AND COLORS.
MOHAIR LOOPS, KNOTS, AND FANCY YARNS FOR DRESS GOODS AND CLOAKINGS.
A. T. SKERRY & CO., 47 LEONARD ST., NEW YORK.

MOHAIR
PLUSH AND
BRAID
YARNS
QUEENSBURY MILLS,
WORCESTER, MASS.
CAMELS
HAIR, LUSTRE,
COLORED MIXTURES,
AND LOOP YARNS FOR DRESS GOODS.
FLYER SPUN and SINGLE WEAVING YARNS.
H. HODGSON, PRES. and TREAS. FRED HODGSON, SUPT.

CHENEY BROTHERS,

SILK MANUFACTURERS.

ALL KINDS OF

Knitting Silks, Ribbons AND Piece Silks,

USED FOR TRIMMING KNIT GOODS.

TRAMS, ORGANZINES and SPUN SILKS, in the Hank, or on Spools or Cones, for Manufacturers' Use. Silk for Special Purposes Made to Order.

MILLS: South Manchester and Hartford, Conn.

SALESROOMS: 477, 479 and 481 Broome Street, NEW YORK.
929 Chestnut St., PHILADELPHIA.
79 Chauncy Street, BOSTON.
186 Franklin Street, CHICAGO

WILLIAM RYLE & CO.,

DEALERS IN

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Foreign and domestic

SPUN SILK YARNS AND NOILS

Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., - NEW YORK.

F. C. BARTON,

Manufacturer of

Narrow Fabrics, Ribbons, Tapes and Bindings

FOR THE MANUFACTURING TRADE.

Telephone, 2320 Franklin. **54-56 Franklin St., NEW YORK.**

FIRE HOSE CORDS { From long staple cotton—6s to 20s yarn in 2 to 100 ply—16 lbs. without a knot.

COTTON WARPS { On beams—single or ply yarns, grey, bleached or colored.

GLAZED YARNS { All plys—any color—for braiders, harness and sewing threads.

UNIVERSAL WIND { For braider cops—warp yarns—grey or colored—2 inch to 12 inch traverse.

Dyeing facilities are new and best quality work guaranteed.
We are prepared to dye yarns for other parties.

WHITTIER MILLS, Selling Office, Springfield, Mass.
Mill, Chattahoochee, Ga.

fore the light weight season starts in next May and spinners could take no orders, even if they were forthcoming, at the extreme prices asked.

It is feared by some weavers that with excessive prices on worsted yarns, foreign cloth will be imported, as the tariff is so adjusted at present that there is a less rate of duty on the finished product than on the partially finished product. With the price of yarn at the importing point, foreign cloth can compete with the domestic article.

The weavers are doing all the ordering of yarn; the knitters of underwear and hosiery are not using worsted yarn to any great extent. This, however, may change at any time. The knitters generally have placed but few orders for yarn, and an increased demand for worsted will force them to advance goods materially.

The hosiery manufacturers are not getting orders for worsted hosiery in as large a volume as has generally been the case at this time.

The top manufacturers are busy and have orders which will easily last two or three months longer. Prices are being firmly maintained, with the prospect of higher prices later. Strikes are feared by both spinners and weavers.

We quote as follows:—

2/40s Australian	1.10	to 1.12½
2/40s XX Delaine	1.02½	to 1.05
2/40s Half Blood	.95	to 1.00
2/20s Half Blood	.82	to .87½
2/36s ⅜ Blood	.75	
2/26s ¼ Blood	.70	to .72

J. BROADBENT & SONS,
Woolen Yarns
for Knitting and Weaving, also Wool Spun Cotton Yarns. Equipment first class, practical experience, small expenses, and low prices. Will take work on commission.
UNIONVILLE, CONN.

WOOLEN AND MERINO YARNS,
1 to 10 Runs, at reasonable prices.
All Wool, Mohair and Wool Spun or Mixed Cotton and Shoddy Yarns, in white, gray and colors.
Dress Goods Yarns a Specialty.
E. M. ROCKWELL,
Leominster, Mass.

TRY OUR
Silkine also Lisle Silk
FINISH
For Hosiery, Knit Goods, Yarn, Fast Black, Harsh Colors and Fibres.
O. K. SOAP CO., 968 Franklin St., PHILA.

J. S. DODDS,
317 Wool Exchange, New York, N. Y

MERCERIZED YARNS
Two and Three Ply, for All Purposes,
In Peeler, Egyptian and Sea Island, gassed and ungassed, natural and dyed. Fast Black for cross dyeing a specialty.
Through H. A. CAESAR & CO.

A. D. SALKELD & BRO.
With
FRED'K VIETOR & ACHELIS.
YARNS,
66-72 LEONARD ST., NEW YORK.

E. JENCKES MFG. CO.
Colored Cotton Hosiery Yarns, Double and Twist Yarns for the Weaving Trade.
PAWTUCKET, - R. I.

DEXTER YARN CO.
Cotton Yarns in Cops, Cones and Skeins; on Beams or Spools, Single and Twisted. Cable Cords and Twines.
PAWTUCKET, - R. I.

RICHARD CAMPION,
Selling Agent for—
Bristol Worsted Mills,
Highland Worsted Mills.
17 Bank Street, Philadelphia, Pa.

WOOLEN and MERINO YARNS.
EATON RAPIDS WOOLEN MILLS,
Eaton Rapids, Mich.

JAMES SPEED,
WORSTED and WOOLEN YARNS
A SPECIALTY.
ALSO TOPS.
170 SUMMER ST., BOSTON.
Long Distance Tel. 4168-2 Main.

FOR SALE

COTTON WASTE,
Card Strips, Oily Card, Peeler, Sea Island and Egyptian Comber.

MANUFACTURER OF

Wool and Cotton Mixed Shoddies,
Camel Hair, Natural and White.

BUYERS of all kinds of hosiery and woolen and cotton Mill Wastes.

Chas. W. Becker, Agent, Amsterdam, N. Y.

SHODDY WM. H. H. SLACK & BRO.,
Springfield, Vt.

Carbonized Stock a Specialty. **FLOCKS**

M. B. SCHWAB, Pres. H. RAWITSER, Treas. ED. GLUECK, Sec. and Gen. Mgr.

RIVERDALE WOOLEN COMPANY,
MANUFACTURERS OF
SHODDIES OF EVERY DESCRIPTION.
CAPACITY 7,000,000 POUNDS PER ANNUM.
CUSTOM CARBONIZING AND GARNETTING A SPECIALTY.
RIVERDALE, NORTHBRIDGE, MASS. New York Office: 140 Duane Street.

WE BUY FOR SPOT CASH any Kind or Quantity Jobs of Woolens and Dress Goods. Seconds, Remnants, Odds and Ends a Specialty. Drop us a line and we will call.
H. & D. FEINGOLD, 89 & 91 Bedford St., Boston, Mass.
Telephone, Oxford 1431-2.

Woolen Yarn.

Spinners continue busy, with the prospect of good business as the season develops. The present is the beginning of the season and manufacturers are not yet under full headway. Even in the present slack period spinners are able to take care only of old customers, and are obliged to refuse new business. Under this condition it will be difficult for both weavers and knitters to increase production by having yarn made outside their own mills.

The bulk of the present business is from overcoating mills, rubber boot lining and hosiery manufacturers. Many of the manufacturers, fearing an advance, covered their requirements in November, and this yarn has not yet been delivered, but the machinery space is tied up to produce the yarn when called for. Manufacturers do not know what to make of the woolen yarn situation. Some thought that because worsted yarn advanced to such a degree that woolen yarn would advance likewise. The best that can be deduced from the present condition is that the demand for worsted yarn being greater than the supply, caused the great advance in that article, while with woolen yarn it is nearer the supply of wool. Wool dealers, having experienced the folly of excessive advance, are taking a sensible course, holding their supply firmly at prices quoted, are not advancing beyond a reasonable sum.

Buyers anticipate higher prices, but today state that they are buying yarn and stock as cheap as any time during the last year.

There is no doubt that manufacturers, in their eagerness to bear the market, are overdoing the bearing end of it, and cool figuring makes extreme statements ridiculous.

We hear buyers stating that they are buying fine noils at old prices. Knitters state that dealers are not offering so much Australian lambs' wool today, and they are beginning to realize that dealers will not sell lambs' wool which costs 70 cents per pound for 60 to 65 cents.

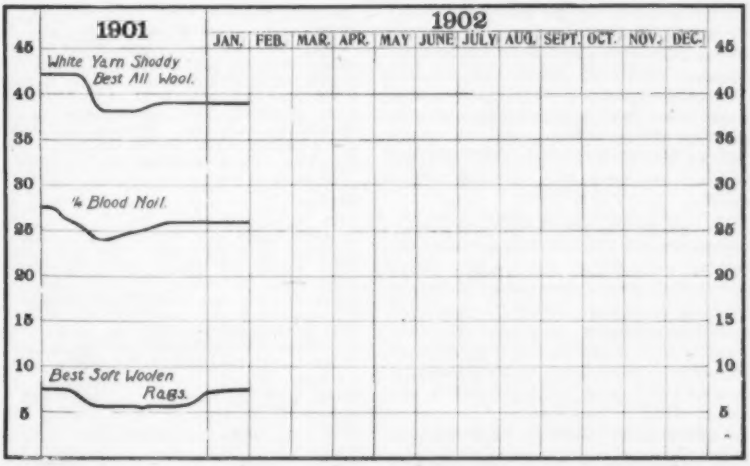
Many knitters are putting in garnett machines and much thread waste will be used during the coming seasons. The knitters are fairly busy. The medium-priced underwear is selling best, and much natural mix underwear will be made first. The cheaper class of goods is selling, but the prices are very unsatisfactory, and is selling for less than last year. The better class of underwear is being sold at this time, but it is early for orders on this line of goods. These orders will be placed in volume about February 15th. A good season is predicted, because there are no stocks in the hands of jobbers and no stocks were carried over from last year. The cold weather is helping fine underwear to a great extent.

The knitters are feeling much encouraged and their only fear is that stocks will get away from them. The firm position of wool is helping business very much. Hosiery manufacturers state that larger orders are being placed this year than last year. The demand is running more to hosiery made out of merino and woolen yarn than from worsted yarn. The price of worsted yarn may be responsible for this state of affairs; at any rate knitters are surprised that more orders for hosiery made from worsted yarn are not placed. The season is backward. It is stated, however, that many orders were placed last year in April, so that there is yet time enough.

The wool hat manufacturers will not start up before April. Manufacturers do not know what class of hats to make, and are very cautious about making without positive orders, as the styles change so quickly that what is a good seller one season cannot be given away the next season at any price. Hats made from mohair were good sellers last year, but whether the rough effect is going to be called for or whether a fine white hat is going to sell, is what these manufacturers would like to know.

The business throughout the Mohawk Valley can be said to be better at the present time than it has been for years. Much Australian noils and thread waste will be used. Threads are selling from 55 to 65 cents per pound and are displacing slubbing and tops, as the threads are all Australian, while the slubbing is mostly domestic wool.

SHODDY, WASTE AND RAG MARKET.



The shoddy mills are busy mostly on the last of the light weight orders, but some on the beginning of the heavies. Many good orders have already been placed, but stocks are moving slowly as yet. Already, however, the cloth mills show a tendency to accept moderate shipments, and it is expected that a few weeks will see a prosperous season in full swing. The demand has been principally for merinos, and some grades have sold at an advance over last month. Quotations show an appreciably higher rate.

NOILS AND WOOL WASTE.

There has been little demand for noil during the past month, although the strength of the wool market is reflected by this stock. A tendency to soften at the first of the year was shown by ¾

WILLIAM B. CHARLES,
COTTON AND COTTON WASTES,
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and ½ blood, but neither grade was quotably lower than the present rate. The general situation warrants holders to keep quotations where they are today.

There is some movement in wool wastes, but the market shows a very poor selection in white stocks.

Cotton wastes are quiet and no tendency for an immediate revival is apparent.

RAG MARKET.

Quotations in woolen rags are still climbing slowly and the market shows every evidence of a good season. This is particularly true of merinos, where the demand has been steady and fairly strong. Our prediction in the January issue concerning a ten per cent. rise appears to have been substantiated in the general trend of the market.

As noted above, merinos have received the major part of the call. New clips have had their share of attention and on a number of grades cannot be purchased at the prices of a month ago.

Although considerable stock was picked up at the beginning of the present advance, a good deal has been purchased on the rising market and many large orders will be placed at a later date.

SHODDIES AND EXTRACTS.

White yarn, best all wool	38-40
White knit, all wool, best, fine	28-32
White knit, No. 2	25-28
Light yarn, extra fine	25-28
New pure indigo blue	23-25
Fine worsted, new black	26-28
New blue clip, best, fine	20-22
Dark mixed yarn, extra fine	22-24
All wool yarn, medium and coarse grades	15-20
Merino.	
Fine light, all wool, No. 1	24-25
Medium light, all wool, No. 1	16½-17½
Medium light, all wool, No. 2	14-16
Fine black, all wool	20-22
Fine dark, all wool, No. 1	17-18
Medium dark, all wool, No. 1	13-15
Medium dark, all wool, No. 2	12-13
Red knit stock, strictly all wool	19-20
Red flannel, all wool	19-20
Dark blue for hosiery, strictly all wool, No. 1	17-20
Dark blue for hosiery, not all wool, No. 2	12-14

DELAINE EXTRACTS.

Light	17-19
Medium light	15-17
Regular gray	12-13
Black	14-15
Fancy colors	16-20

WOOLEN RAGS.

Fine merchant tailors, all colors	8-9
Choice light colors	12-14
Browns	12-13
Blacks	9-10
Fine blues, plain	10-11
Fine dark	10-11

Medium dark	6½-7½
Worsteds.	
Blue	15½-16½
Black	20-22
Serges.	
New blue	15-16
New black	15-16
Flannels.	
New scarlet	18½-22
New blue	17-18
Cloakings	3-4

SOFTS AND KNIT STOCK.

Soft woolens, best	6½-7
Old white flannels	17-18
White flannels, No. 2	11-12
Old red flannels	9-10
Light blue flannels	7½-8½
Old blue flannels	6½-7
Old plaids	5-7
White stockings	17-18
White hood stock	21-22
Clear hoods	8-9
Red stockings	8-9
Blue stockings	7-9
Fancy stockings, No. 1	7-9
Gray stockings	8-9
Black stockings	9½-11
Knit stock comforters	7½-8½
Red knit	9-10
Light gray knit	8-9
New light fancies	15-16
New fancies	11-12
Merinos.	
Light, fine	14-15
Light, coarse	7½-8
Fine dark	9-10½
Dark, No. 2	5-6½
Coarse dark	4½-5½
Blue	10-11
Blue—seamed	14-15
Black—unseamed	10-11
New black	18-20
Small	3-3½
Bunting	6-8

NOILS.

Australian	48-55
Fine domestic	40-45
½ Blood	35-40
⅜ Blood	29-32
¼ Blood	25-27
Braid	23-25
Carpet (white)	14-18
Carpet (colored)	10-12½
Seedy.	
½ Blood	25-30
⅜ Blood	20-25
¼ Blood	17-22

FLOCKS.

Shear, fine white, all wool	10-12
Fine indigo blue, all wool	9-9½
Fine black, and blue, all wool	7½-8
Fine dark, all wool	6-6½
Gig, fine, all wool	3-4
No. 1, black, all wool cut	6-7
All wool, fancy, shear and gig	2½-3½

COTTON WASTE.

No. 1 Spinners	7
No. 1 Machine	4½-5
No. 2 Machine	4¼-4¾
Machine Cop	5-5½
No. 1 Cop	4½-5
No. 1 Card	6-6½
No. 2 Card	3-3½
No. 1 Oily Card	2½-3
No. 2 Oily Card	1-2½
Egyptian Card	6¾
Peeler Combing	7-7½
Egyptian Combing	7-7½
No. 1 Linters	3½-4½
No. 2 Linters	3-3½
White Clips	4-5
Colored Clips	2-2½
No. 1 Picker	1¾-2½

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Slater Woolen Co., Webster, Mass.
Worcester Bleach & Dye Works, Worcester, Mass.
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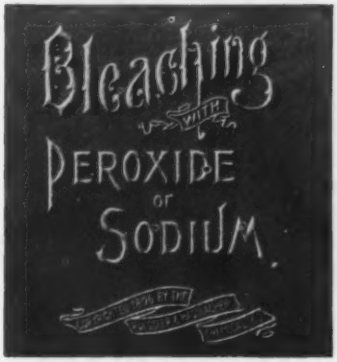

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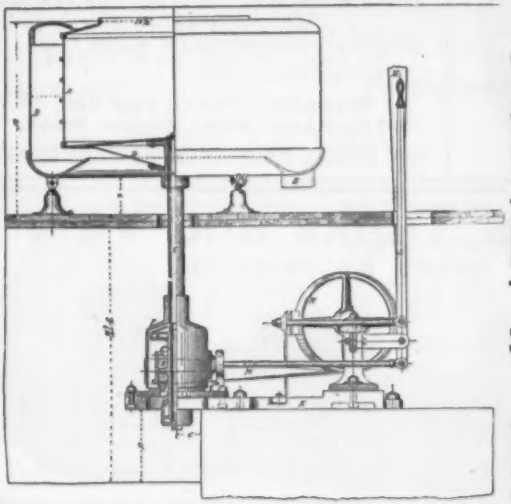

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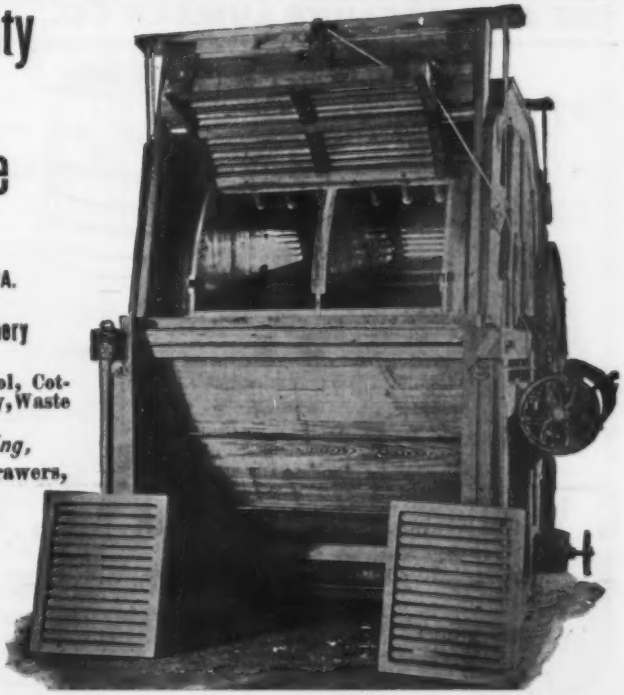

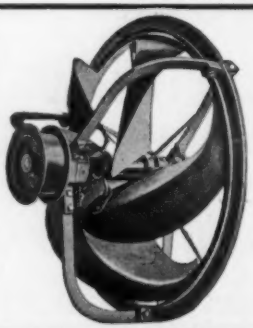

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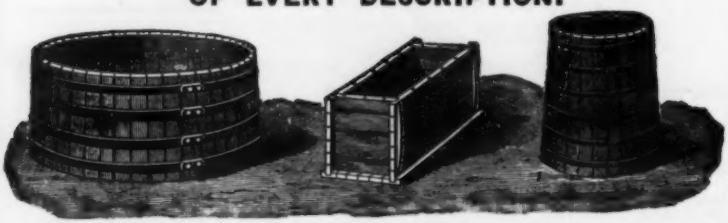


Cypress is remarkable for its great durability. There is no other wood so well adapted for the manufacture of Tanks, Vats, Cisterns, Dye Tubs, etc. We handle Cypress from the Stump, and our stock is of the best.

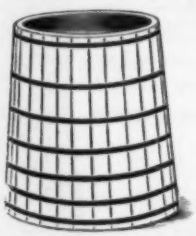
Our Tank Factory is complete. Let us know your wants.

THE A. T. STEARNS LUMBER CO., BOSTON.

The Cypress Lumber Co.

CYPRESS TANK . . . FACTORY.

APALACHICOLA, FLORIDA.



TANK, VAT and SILO MANUFACTURER.

E. F. SCHLICHTER,

321 Vine St., - PHILADELPHIA, PA.

G. Woolford Wood & Tank Mfg. Company.

OFFICE:

Real Estate Trust Building, S. E. Cor. Broad and Chestnut Streets, Phila. Works, Darby Sta., Pa. P. W. & B. R. R.

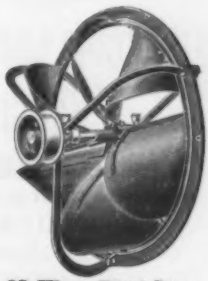
Wood Tanks and Dye Tubs of all kinds and for all purposes of any design or size. Our New Plant is large and well equipped and our yard is well stocked with best material. Send for estimates on anything in the tank line and I will guarantee satisfaction.

Fans in February

When lenghtening days bring cold intense,
And steam within your rooms is dense,
The Berry Wheel will keep them clear
And bring fresh air from far and near.

TRY ONE. **IT PAYS.**

A. HUN BERRY.



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From 1 to 6 ft. in Diameter.

NEW ENGLAND

Ventilating and Heating Company.

Our system of Ventilating and Drying by air circulation will improve quality and increase production.

PLANS AND ESTIMATES ON APPLICATION.

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UTILIZATION OF BOILERS.

GREEN'S ECONOMIZER

Increases the force of the boilers, but not their number, by bringing into play larger heating surface and through the prevention of sedimentary deposit. TEXTILE MILLS, BLEACHERIES AND DYE HOUSES will appreciate this saving, also the heating of the mill without additional fuel. 10 to 20 per cent. saved by using the waste gases.

Can you successfully compete with mills thus equipped?

Twenty prize medals for efficiency, latest from the Pan-American Exposition.

Our Booklet,
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Free.

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Sole Manufacturers in the U. S. A. MATTEAWAN, N. Y.

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MACHINE CO.

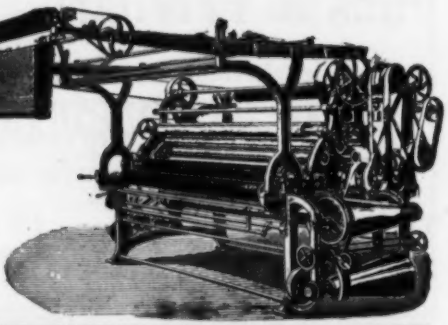
ALBERT BIRCH, Treasurer.

SOMERVILLE, MASS.

Combining the latest American, French and English improvements.

Send for prices.

Samples napped and machines on exhibition



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MANUFACTURERS OF

Wool Burring, Picking and Mixing Machinery.

Cloth Finishing Machinery

FOR COTTON, WOOLEN, WORSTED, PLUSH GOODS, ETC.

SHEARING MACHINES A SPECIALTY.

Send for Descriptive Catalogue.
New Works, 56 Cambridge St., near Webster Sq.

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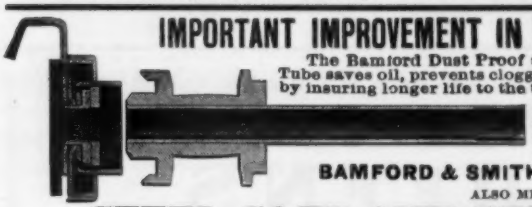

IMPORTANT IMPROVEMENT IN WORSTED SPINNING.

The Bamford Dust Proof and Self-Lubricating Spindle Tube saves oil, prevents clogging with dust and lint, thereby insuring longer life to the tubes, saves labor, maintains uniform speed, **and most important of all,** makes PERFECT YARN. Refer to largest worsted mills.

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ALSO MFRS. OF

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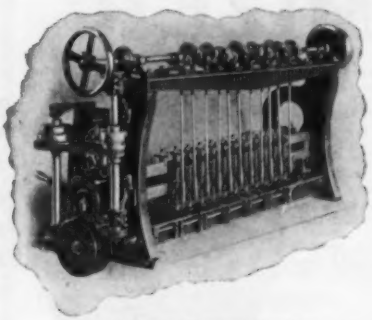
CAPS, FLYERS, TUBES, Etc., REPAIRED.



Standard Horse Blanket Machine.

L. F. FALES,

Manufacturer and Builder of

Multiple Needle Sewing Machines

For Sewing Carpet Linings, Horse Blankets, Wadding, etc.

These machines can be built with any required number of needles.

SPECIAL MACHINERY DESIGNED AND BUILT.

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Sole Makers of the TORRANCE PATENT

Self-Acting Balling Machine

The attention of Woolen Manufacturers is invited to these Machines as convenient labor-saving appliances. The machine can be adjusted to make any size balls to suit lots, and the creel is constructed to carry twice the number of spools used by the old system.

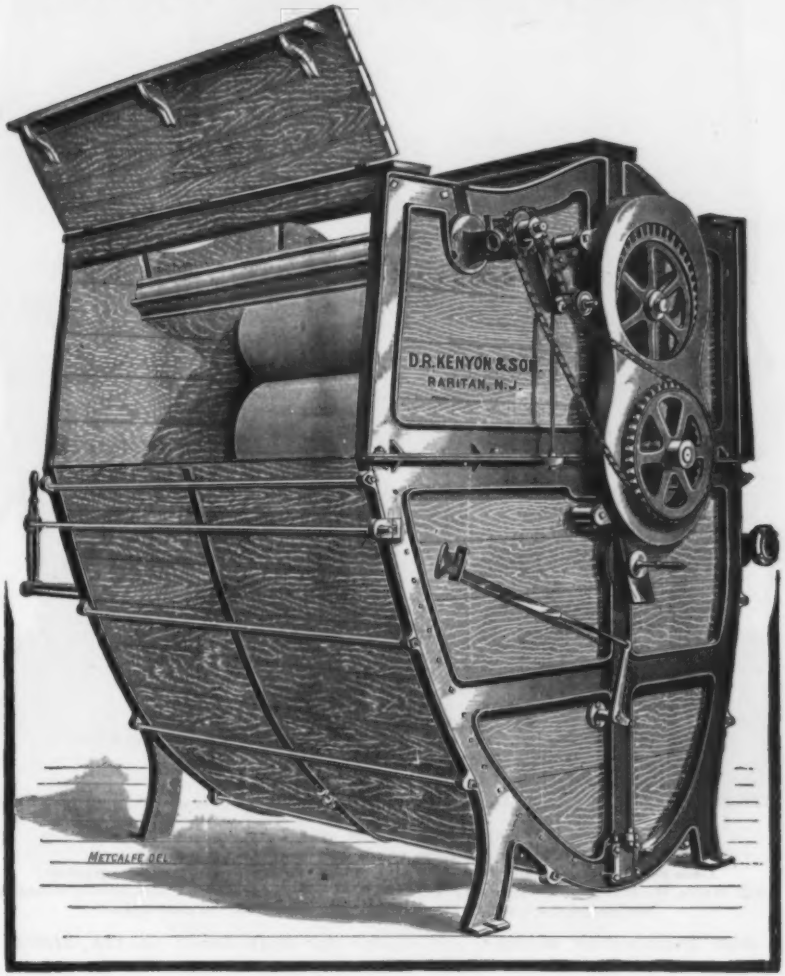
SEND FOR CIRCULAR.

18 & 20 Davis St., E. Newark, N. J.

KENYON'S
IMPROVED CLOTH WASHER

— FOR —

FOUR, SIX OR EIGHT STRINGS OF GOODS.



BEST QUALITY SOLID ROLLS.

Improved trough and valves, preventing wash of liquor and insuring quick and thorough scouring and rinsing.

D. R. KENYON & SON,

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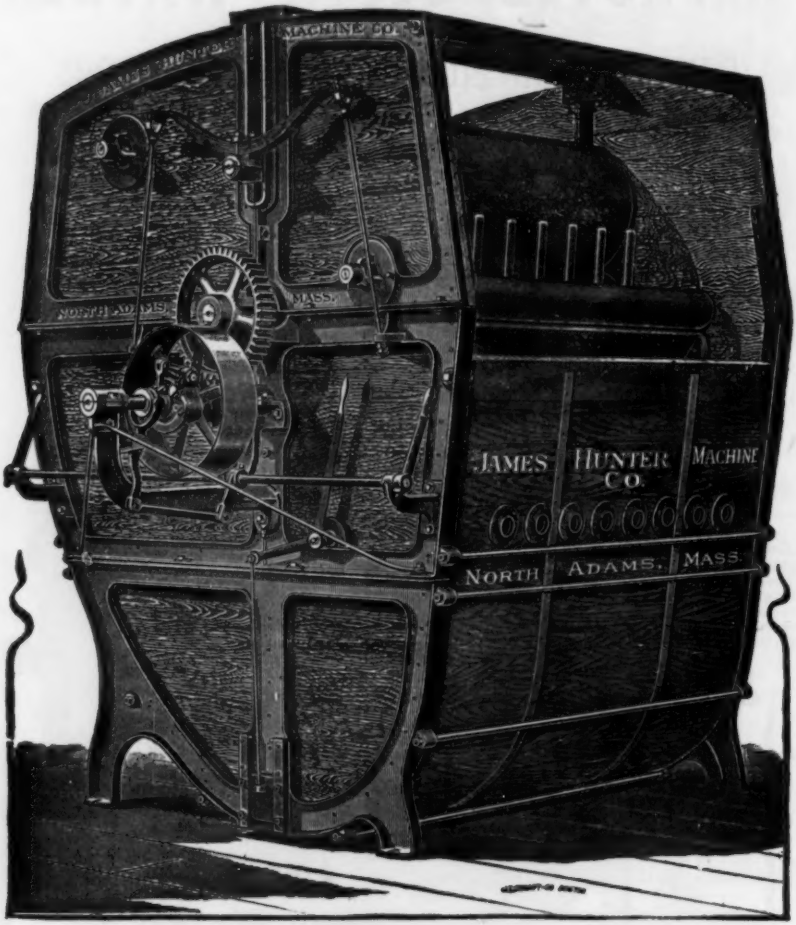
BUILDERS OF WOOLEN MACHINERY.

HUNTER'S IMPROVED CLOTH WASHER

For Four, Six and Eight Strings of Goods.



Power transmitted by means of a Friction Pulley.
No Shifting of Belt to start and stop the machine.
Less power required than for any other Washer of equal capacity.
All Main Bearings are adjustable. All Bearings are on the outside of frames.
No dripping of Oil on the Goods, or in the Wash Box.

Also Combination Washer and Fuller for Knit Goods in the String.

Write for further particulars and prices

JAMES HUNTER MACHINE CO.,

North Adams, Mass.

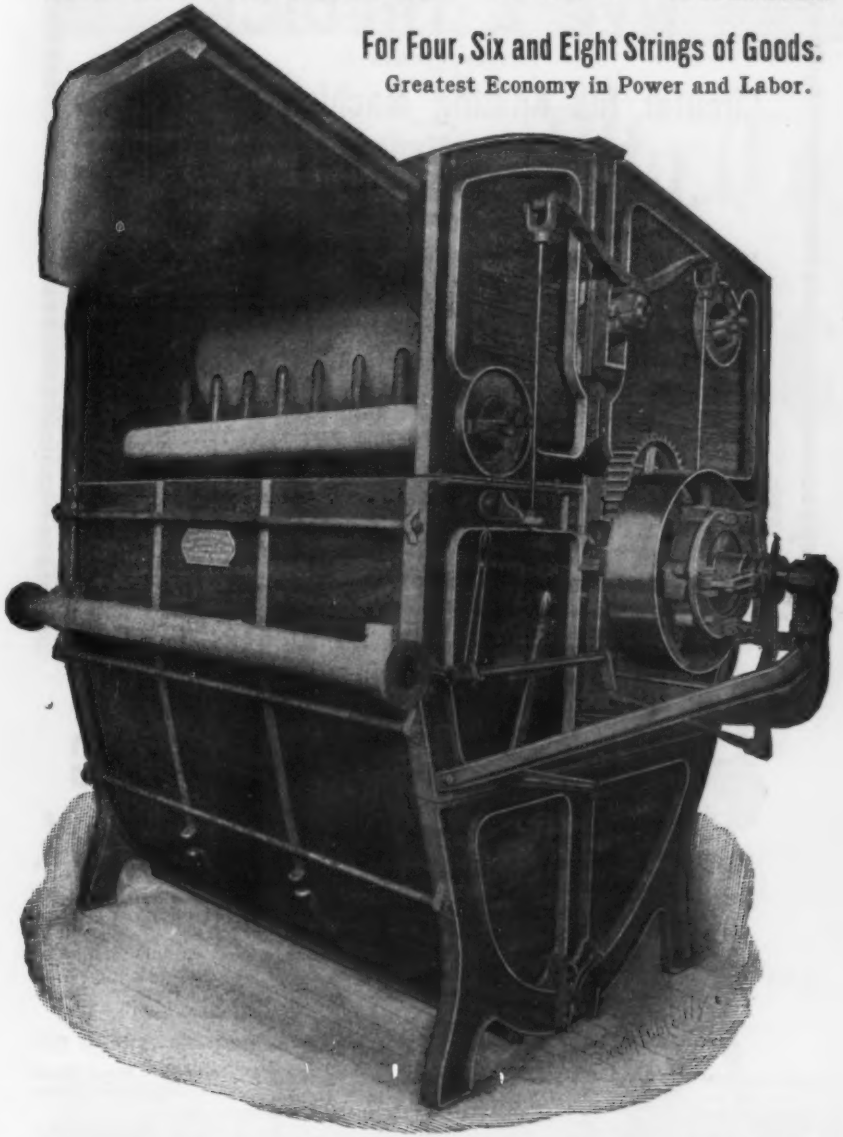
Boston Office, Room 67, Mason Building, 70 Kilby St.

Long Distance Telephone, 2954.

LATEST IMPROVED CLOTH WASHER

For Four, Six and Eight Strings of Goods.

Greatest Economy in Power and Labor.



Unequaled for Capacity and Rapid Washing

All Kinds of Heavy and Light Goods are Desired.

Attachment for Washing and Fulling Knit Goods in the String.

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Long Distance Telephone. Send for New Illustrated Catalogue. Telephone No. 1522.

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MANUFACTURERS OF

Circular Rib Knitting Machinery,
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For Ladies' Vests, Combination Suits, Corset Covers, etc.
Men's Underwear, Sweaters, etc.

New Improved Sleeve Machines.
Machines for Rib Hosiery, Rib Tops and Cuffs.

LATEST IMPROVEMENTS ON ALL MACHINES.

MECHANICAL STOP MOTIONS
FOR CIRCULAR RIB KNITTING MACHINES.

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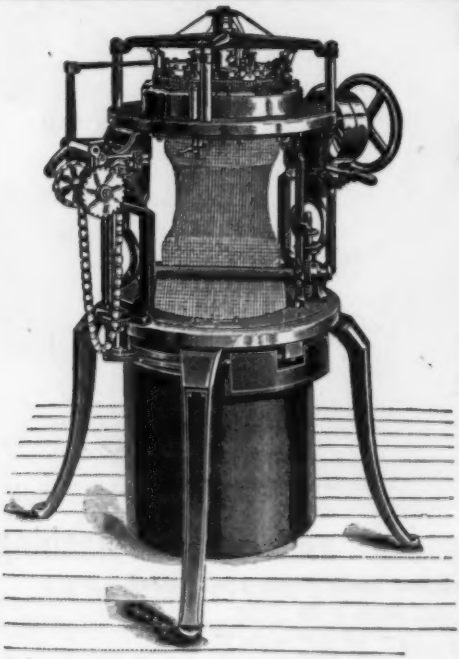

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RIB KNITTING MACHINERY,

AUTOMATIC AND PLAIN,

For all classes of Ribbed Hosiery and Underwear, Combination Suits Sweaters, etc.

ESTABLISHED REPUTATION FOR

Largest Production. Best Quality Fabric. Durability, Economy of Operation.

Full particulars, Description and Samples furnished upon Application to the

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Announce that their

LINE OF EDGING

FOR SPRING, 1903,

Now in active preparation, will be more RADICAL and EXCLUSIVE than ever before.

Ready for inspection

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All goods sold direct.

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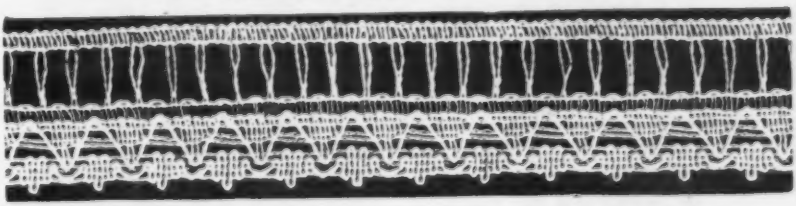

THE INVINCIBLE, "C,"
FULL AUTOMATIC KNITTING MACHINE

For SEAMLESS Hosiery

A BIG PRODUCER.

PRACTICAL AND ECONOMICAL IN OPERATION.

NO EXPERIENCE REQUIRED TO TRANSFER RIBBED TOPS BY THE INVINCIBLE METHOD.

A MACHINE OF THE HIGHEST GRADE.

Write for Catalogue.

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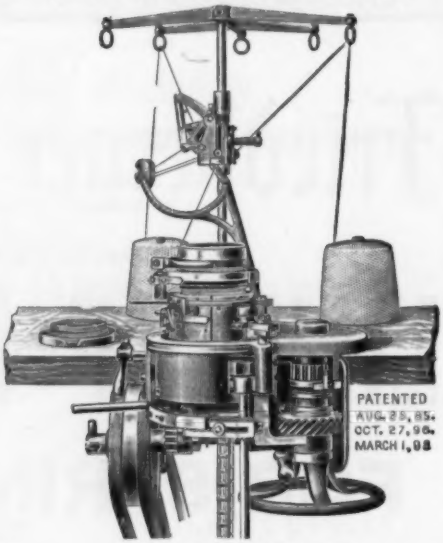

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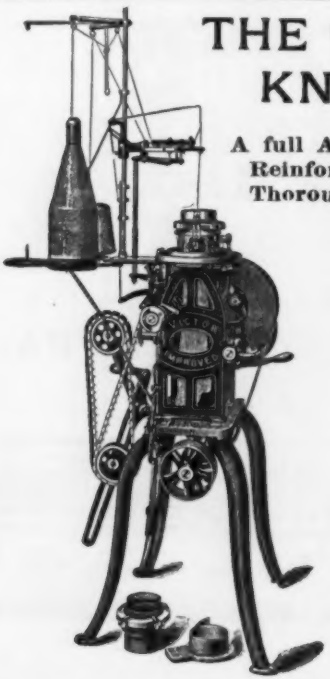
THE "NEW" VICTOR KNITTING MACHINE



A full Automatic Seamless Hosiery Machine. Reinforcing Thread Automatically Inserted. Thoroughly Interchangeable in all its parts.

More simply constructed than any Machine on the market.

Automatic Two-color Striping Attachment, also, Black-Leg White-Foot Attachment.

American Knitting Machine Co.

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Corner SIXTH & ARCH STS.

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Southern Branch, Charlotte, North Carolina.
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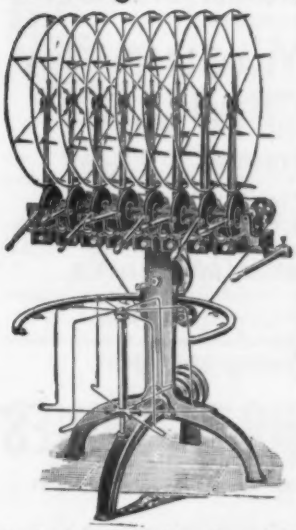
FACTORY AT WOONSOCKET, R. I.

JAMES TAYLOR,

Knitting Machinery for Hosiery and Underwear



Back-winding Machine for winding the yarn from imperfect pieces back into skeins.

New and Second Hand.

SPECIALTIES IN NEW.

Sole Selling Agent for Stafford & Holt.

UNEXCELLED MACHINERY FOR RIBBED UNDERWEAR,

Sweaters, Bathing Suits, Toques and Specialties, with or without Automatic Stripers and Designers.

These machines have the **only absolutely perfect Take-up Device** Depends neither on springs, friction, ratchet, nor state of weather for its efficiency.

Builder of the **ONLY BACK-WINDING MACHINE** in the market. Ravels and backwinds all classes of Knit-Goods, including plated work and fabric made on 8-feed plain or tuck machines.

All inquiries and orders relating to the above machines should be addressed direct to me.

LARGE STOCK IN SECOND HAND.

Everything pertaining to the manufacture of all classes of Knit Goods, for example: Machines for Ribbed and Flat Underwear Hosiery, Sweaters, Jackets, Mittens, Gloves, Borders, Facing, and Gas Mantles, Buttonhole and Button sewing Machines, Concealed Stitch Welters and Trimmers, Union Specials, Steam Presses, Winders, Ribbers, Sleevers, Loopers, Whizzers, Stop-motions, Cylinders and Dials, Needles, Pins in bulk, Brass Stamps, Stamping Ink, –in short, write us if you are in need of anything, or if you have any Machines for sale.

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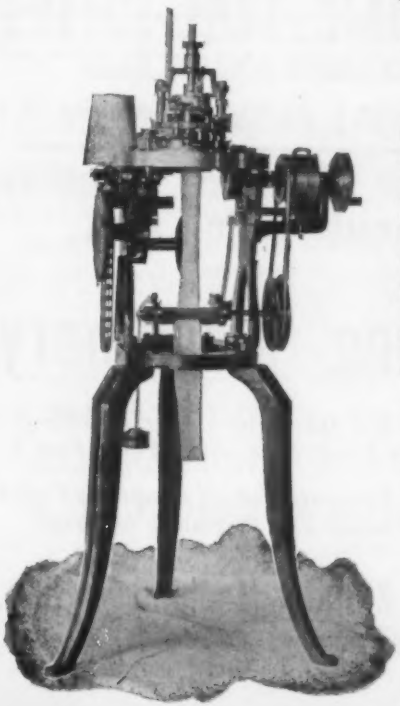

THE RUTH RIBBERS

ARE THE CHEAPEST!
ARE THE BEST!

Built for all classes and kinds of

Hosiery and Underwear.

Every adjustment positive and so simple that only a moment's time is needed to change from one style to another.

SPECIALTIES: LACE EFFECTS
RUTH SPLICER
AUTOMATIC WING SLEEVER
RUTH STOP MOTION

The superiority of the RUTH RIBBER lies in

Quality of Fabric Produced,
Ease of Operation,
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Enormous Output,
No Infringement.
No Royalties.

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NORRISTOWN, PENN.

G. W. RUTH, Manager.

PEPPER MACHINE WORKS

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Successors to PEPPER MANUFACTURING CO.

MANUFACTURERS OF

KNITTING MACHINERY,

INCLUDING

Pepper's Flat Ribbed Cuff Machines,

Automatic Welt and Loose Course Machines for Stock Tops. New Circular Stripers with Welt, Loose Course and Striping (Automatic), for Short Cuffs, Sock Tops, Hose Legs, Wristers, etc.

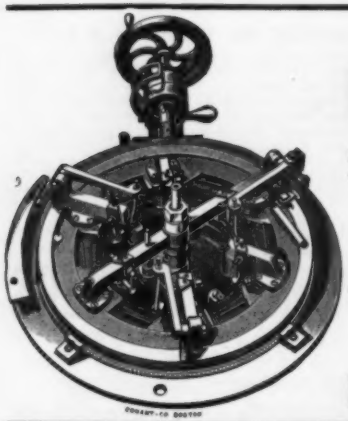
GOLF AND BICYCLE STOCKING MACHINES,

ALL KINDS OF

CIRCULAR RIBBED MACHINES,

For Men's Underwear, Ladies' and Misses' Hose Legs and Leggins.

CORRESPONDENCE SOLICITED.



CIRCULAR

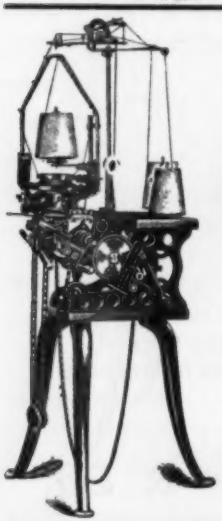
KNITTING MACHINES

Either plain or full automatic, with stop motion complete, for

RIBBED UNDERWEAR,
SWEATERS,
CARDIGANS,
CUFFS and ANKLETS.

The Leighton Circular Machines are the only ones which **Rack** or **Shog** the needles for fancy borders; also built for automatic striping; and with from 4 to 16 feeds for underwear.

Leighton Machine Co., Manchester, N. H



Excelsior Knitting Machine Manufacturing Co.,

BUILDERS OF

Knitting Machinery

Two-Feed 7-8 Automatic for Ladies String Work, also Black Legs with White Feet.

Regular 7-8 Automatic for all classes of Cotton Hose. Special 3-4 Automatic for Wool.

Excelsior Knitting Machine Mfg. Co.

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H. BRINTON & CO.,

213-215 Race Street,
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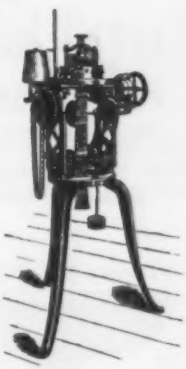
BUILDERS OF

Full Automatic Seamless and Ribbed



Knitting Machinery.

CIRCULAR RIB KNITTING MACHINES,

Carefully designed and well made with Solid Forged Steel Cylinders and Dials, Segmental Cam Rings, Encased Take-up, Stop Motions, etc. Standard Sizes, Reasonable Prices. Also

KNITTING MACHINE CYLINDERS AND DIALS.

STAFFORD & HOLT. - Little Falls, N. Y

PERFECT FAST BLACK FOR HOSIERY.

THE WORK SPEAKS FOR ITSELF.

Dubois' Sanitary Fast Black Leads Them All.

Adopted by leading mills everywhere successfully. Mills started with Dye Formula for black with lisle thread finish, also with colors and bleaching formulas if desired, taught by Mr. Dubois himself. Will contract for the Dye formulas alone, or for any piece of machinery required to start fast black dyeing.

FOR LUMP SUM IN CASH OR ON INSTALMENTS.

The black is inexpensive, non poisonous, color always uniform, will not crock, fine shade blue black or jet black produced as desired without extra cost.

Stockings dyed in one dip, right from the Knitting machine and leaves the goods strong. Best, safest, quickest and finest black in the world

Note —My oxidizing machine, patented, June 18, 1901, No. 676647, is especially constructed for "Lisle Thread Finish" and is the only rotary machine that carries the goods while oxidizing or lisleing at all the points of the compass; oxidizes in one third less time and does away with production of nascent hydrochloric acid that tenders the goods.

No. 1 Cost $2.60 per 100 lbs.
" 2 " 2.20 " " " } These three blacks will not turn green when tested
" 3 " 1.80 " " " } by muriatic acid.
" 4 " 1.40 " " " and is almost ungreenable to acid test.

I guarantee all the above in every particular, or no money. Address Direct

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Inventor, Patentee,

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NOTE.—Calmore & Co., of Philadelphia, Pa., are no longer my selling agents; I sell direct.

PAXTON & O'NEILL'S

3-4 Automatic Knitter

FOR ALL KINDS AND GAUGES OF SEAMLESS HOSIERY.

Has the preference wherever used over 7-8 and full automatics. Because it makes as much or more goods and better goods. Costs less for repairs. Gives less trouble to fixers Range on Half Hose, from the coarsest to 220 needle.

Exclusive rights to Brown's ATTACHMENTS FOR LACE EFFECT.

127 Bread Street, Phila.

Cylinders and Dials for all size machines.

BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.

JOS T. PEARSON 1815-21 TAYLOR ST. KENSINGTON PHILA

"OVERLOCK" MACHINE

(TRADE MARK.) (Pat. Apr. 5, 1892.)

Patent twice sustained by U. S. Circuit Court of Appeals.

MAKES OVER 3000 STITCHES PER MINUTE.

TRADE MARK.

For SEAMING, HEMMING AND OVEREDGING Flat, Ribbed and Fancy Underwear and Hosiery.

And for OVEREDGING Lace Curtains, Ribbons, Belts, Hat Bands, Flannels, Blankets and other Fabrics.

WILLCOX & GIBBS SEWING MACH. CO. NEW YORK

IT MAKES—

1. The "OVERLOCK" ELASTIC SEAM.
2. The "OVERLOCK" ELASTIC CONCEALED STITCH HEM OR WELT.
3. The "OVERLOCK" ELASTIC OVER EDGE.
   And in each case with one operation only, including trimming and covering of raw edges.
4. The "OVERLOCK" TAILOR-MADE SEAM. (By means of the Feller.)

Business established in 1859.

THE ELASTICITY OF ITS STITCH EQUALS THE FULL STRETCH OF THE GOODS.

WILLCOX & GIBBS SEWING MACHINE CO.,

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LONDON PARIS MILAN DRESDEN

Knitting Machinery

SCOTT & WILLIAMS,

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WRITE FOR CATALOGUE.

HAVE YOU SEEN

The Improved Vertical Dryer?

Nothing Equals It For Tubular Knit Goods.

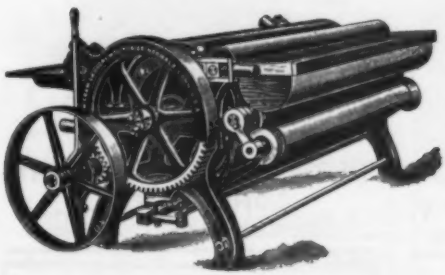
It is highly recommended by Mill Owners and Superintendents who have them in use.

There is only one mill left in Utica which is using anything but **Vertical Dryers**, and in *that mill* half the dryers are my make.

Send for Circulars and Price List to

E. M. ANTISDEL, Utica, N. Y.

AUTOMATIC IRONING AND PRESSING MACHINE FOR KNIT GOODS.



This machine irons and presses ribbed and flat underwear, giving a fine smooth finish and most attractive appearance to the goods, not to be obtained in any other way. It does not break buttons. Inexpensive and easy to operate, and has large capacity. Knitting mills using them are greatly pleased with results. This method of finishing is sure to come into universal use. Send for further particulars to

J. W. CRAW LAUNDRY MACHINERY CO.,

SOUTH NORWALK, CONN.

THE

Merrow High Speed Crochet

and Scallop or Shell Machines,

For finishing the edges of Knit Goods, Bed Blankets, Horse Blankets, or other fabrics.

For particulars and samples, address

THE MERROW MACHINE CO.,

28 Laurel St., - Hartford, Conn.

Branch Offices and Show Rooms

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LEWIS JONES,

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GAS ENGINES for city or country.
BRUSHING MACHINERY
KNITTING MACHINERY

EFFICIENT
DURABLE
LOW IN PRICE.

WILFRED WELLS,

SOLE MANUFACTURER OF THE

CHAMPION HOSIERY STAMP.

PATENTED JANUARY 7, 1890.

The only Perfect Stamp for Hosiery, Underwear and all Woven Fabrics.

Blocks for Printing Hosiery.

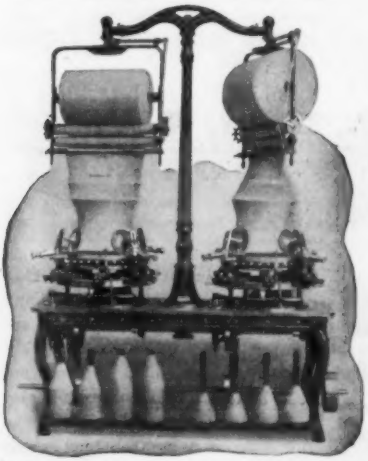
505 W. LEHIGH AVE., PHILA., PA.

CHARLES COOPER, BENNINCTON, VT.,

KNITTING MACHINE AND NEEDLE WORKS,

MANUFACTURER OF

Flat Rib Knitting Machines, 2 to 5 sections, Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Collarette Attachments, etc., etc. All the latest improvements. Sinkers and all Rib Machinery supplies. Patent Springs for Dyeing Boards. Also Ribbed Anklets made to order. Branch Shop, AMSTERDAM, N. Y.



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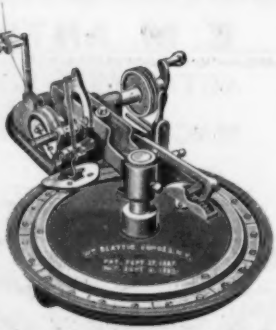

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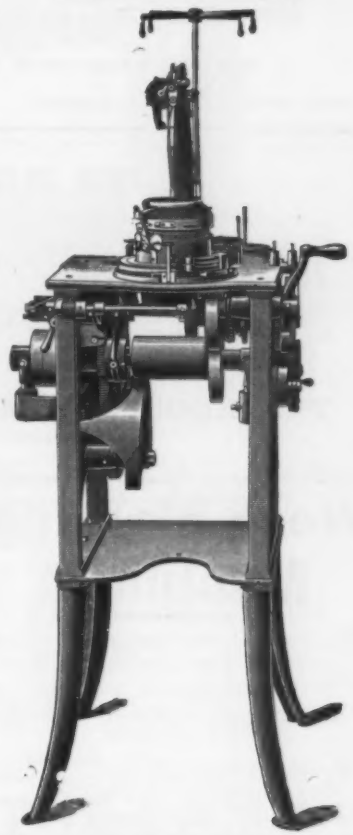

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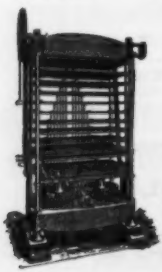

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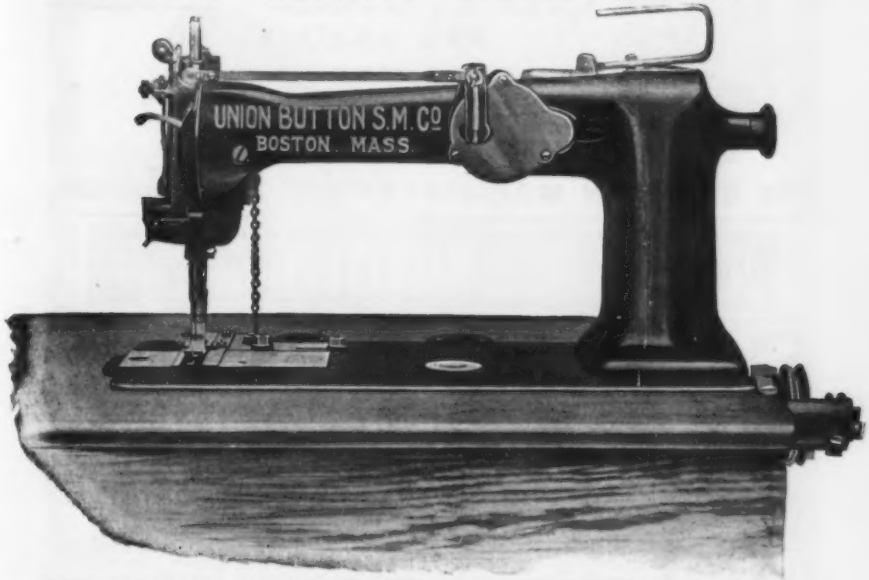

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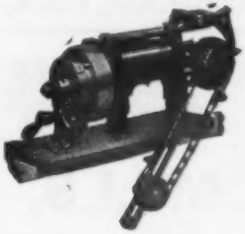

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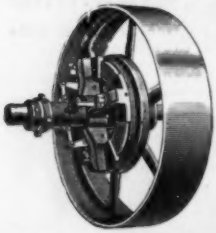

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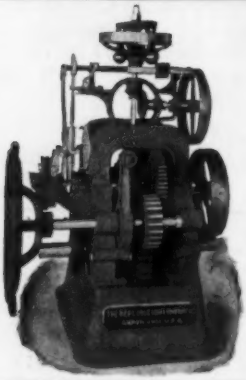

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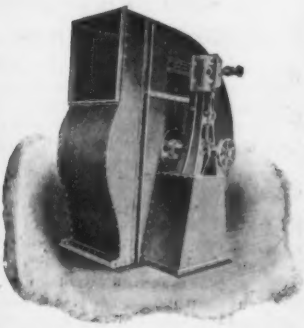

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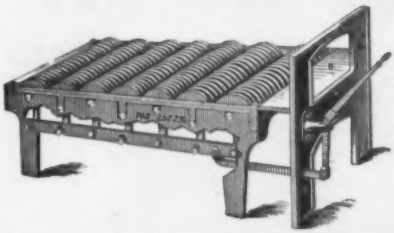

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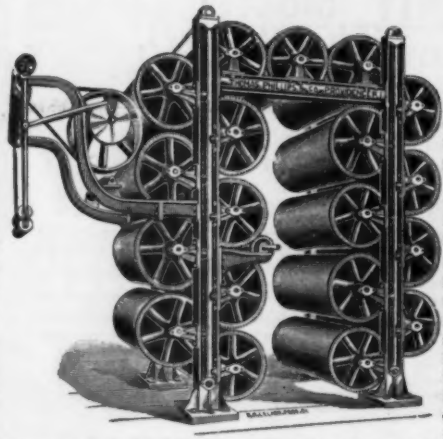

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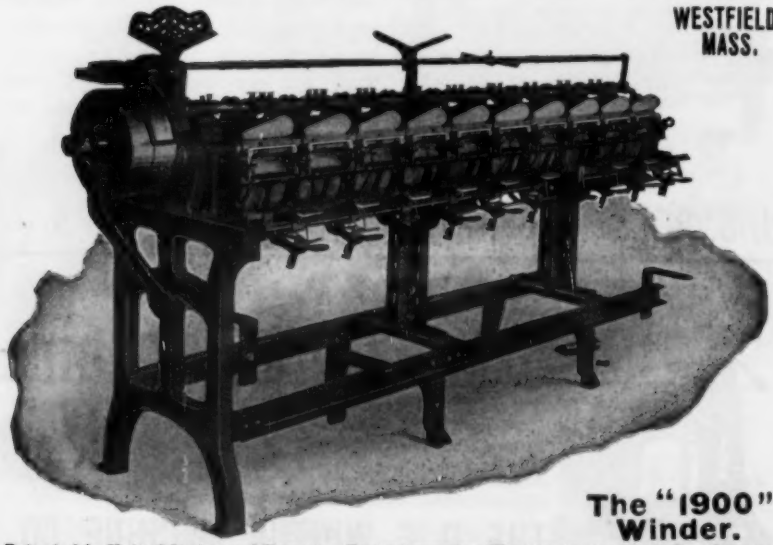

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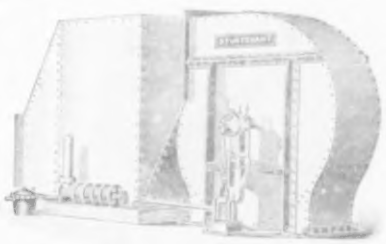

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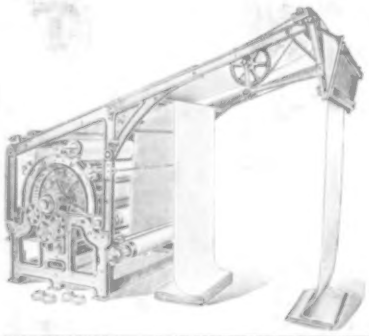

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